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ANGINA PECTORIS AND ITS TREATMENT*

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A FEW years ago, there was considerable criticism of the use of the term *angina pectoris*, on the grounds that angina is not a disease but a symptom occurring in several diseases; that there is no uniform pathology present; that angina may occur without coronary sclerosis; and that coronary sclerosis often occurs without angina. While there is some foundation for this criticism, clinical evidence, as well as pathologic and electrocardiographic studies have supported us in regarding angina, if not a distinct disease, as much a clinical entity as is asthma.

The term *angina pectoris* has been used to describe this disorder since 1768, when Heberden wrote his classical description of it and gave it its name.

It is a disorder of middle life and old age, characterized by a peculiar pain, generally substernal, induced in its victims by anything which increases the work of the heart, such as exercise, emotion, or hyperthyroidism, showing a tendency to increase in severity and frequency as time goes on, and to reach a climax in coronary occlusion or sudden death. The mechanism that produces this pain is still somewhat obscure, but clinical evidence points to its being due to a relative ischemia of the heart muscle as the result of a lack of elasticity of the blood supply, so that a flow that is adequate at rest becomes inadequate when the heart load is increased. This insufficiency is generally caused by coronary sclerosis but may be due to syphilitic lesions of the aorta or coronaries, to occluding vegetations, to obliterative endarteritis, or, still less frequently, to severe aortic regurgitation of rheumatic origin. The last three causes account for most of the cases seen in young people. Clinically, classical angina pectoris is due to coronary sclerosis in the vast majority of cases, and when we think of this disease we, as a rule, think of this form.

The predisposing causes of angina are still somewhat debatable, but heredity undoubtedly plays a part and certain families, such as the Arnold family of England, are prone to develop it. It is much more common in the male than the female, in the ratio of three to one, and is much more common in men who do intensive mental work and who are under nervous strain than among manual laborers. It is largely a professional and business man's disease and is particularly frequent in the overambitious who have vasomotor instability and a very sensitive nervous system.

The influence of tobacco and other poisons in the production of this disorder, and of arteriosclerosis in general, is still undetermined. Whether tobacco is a factor in the predominance of this trouble in the male may not be decided even when women smoke as much as men because more and more women are becoming subject to the same strain in business and the professions as their brothers, and angina is becoming increasingly prevalent among them whether or not they smoke. The increase of the incidence of this disease is one of the major medical problems of today; the number of men who are taken, at the height of their usefulness to their families and the world, by this dread malady should awaken our intense consideration of possible methods of prevention.

The chief symptom of angina is pain, sometimes slight and often severe, generally substernal, and commonly described as squeezing, pressing, choking, or, more rarely, burning. It frequently radiates down the inner side of the left arm, causing a sensation as if the arm was pressed or bursting, or as if the clothing were too tight on the wrist. The pain may go down the right arm instead of the left, or may be felt in both arms. It is sometimes felt in the throat as a clutching sensation, or in the jaws, under the left shoulder blade, or even as an earache. In the earlier stages it is brought on only by strenuous exercise such as hurrying uphill and is more apt to occur if its victim is excited or angry at the time. It comes on more easily after eating, especially about twenty minutes after, and is caused by less exercise on a cold than on a warm day. As time goes on, it requires less and less effort to bring on the pain and the stage may be reached when even mental effort or sustained interest precipitates

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an attack. The recent work of Dr. Blumgart at the Beth Israel in demonstrating the tremendous increase in the cardiac output produced by the injection of adrenalin, and the experiments of Dr. Cannon showing the stimulating effect of the emotions and of cold on the adrenal glands give us a clear explanation of the causation of angina in the cases which are brought on by cold or excitement. It is rare to have pain at night except in the late stages of the disorder.

The diagnosis of angina is generally easy and unmistakable when a careful history is taken. There has been a great deal written about the differential diagnosis between true and the so-called "false" angina (a bad term), but it is seldom that we are in doubt whether we are dealing with a cardiac neurosis or angina pectoris. The confusing cases are generally those in which there is angina plus a developing neurosis. The age of the patient is a guide, as is also the manner in which the history is given. The neurotic patient exaggerates his symptoms, but the patient with angina seldom does. Patients with angina often remark that they feel as well otherwise as ever and seem surprised that they can do so little without being stopped by the pain. Like cancer patients they seem to sense the seriousness of the symptom and sometimes to be secretive about it. I recently had a neurotic patient, a constant complainer of minor disorders, who had angina for two years without telling anyone, until thrombosis developed and he had to send for help. The pain of a cardiac neurosis is generally under the nipple or precordial; the pain of angina, substernal. The neurotic does not give a clear history of pain after exertion which subsides promptly with rest, but is apt to insist that it is constant whether at rest or not. The true angina patient stands still when in pain; the neurotic is often restless.

The most important matter which concerns us in the differential diagnosis, when the symptoms are those of angina, is to consider and recognize the various physical or pathological conditions which may cause this type of pain. Is there evidence of hyperthyroidism? In cases of doubt a metabolism test should be made because hyperthyroidism may be the inciting factor and relief of this condition, should it exist, may abolish the attacks. The heart should be examined for evidence of syphilitic aortic involvement, aortic systolic and diastolic murmurs with enlargement. Here the Wassermann test is helpful, but many undoubted cases of syphilitic heart disease give negative Wassermann reactions.

If attacks have come on and lasted for some time, independent of exercise, they may occasionally be caused by paroxysmal tachycardia or fibrillation, but with these cases the physician is generally summoned in time to see the patient during an attack and can easily detect the rapid regular or irregular rhythm. Pain goes away as soon as the abnormal rhythm ceases and the heart becomes normal in rate. The ectopic rhythm drives the heart and has the same effect in producing pain as does exercise.

It is most important, in seeing a patient during an attack of angina, to determine whether or not thrombosis has taken place, because of the absolute necessity that the patient with thrombosis be given a long rest in bed. Here again if the possibilities are considered, the diagnosis is generally easy and, as Dr. Christian said, is frequently made with accuracy and ease by medical students. In simple angina, pain comes on with effort or excitement and subsides with quiet and rest; in thrombosis it frequently starts when the patient is at rest, often during the night or early morning, and lasts for hours. It is not relieved by nitrites and often only partially by morphine in large doses. The severity of the pain is not a sure guide as the pain of thrombosis may be slight, although as a rule it is terrible. Pain in thrombosis is sometimes wave-like, fading away and coming back several times.

There are no physical signs of angina and the heart often appears normal on examination. The signs of disease, if present, are due to concomitant vascular disease such as cardiac hypertrophy, hypertension, etc. The electrocardiogram is of help in determining if muscular degeneration or coronary thrombosis has taken place. As suggested by Dr. Levine, adrenalin may be administered in the doubtful case to induce the pain or, as is better, nitroglycerin may be given as a therapeutic test, the patient to report whether relief was obtained from the drug. It is important to ascertain how soon the nitroglycerin relieves, as it should relieve inside of two minutes when crushed in the mouth. The neurotic patient may claim relief, but not until a much longer period of time. Although I believe we are justified in making the diagnosis *angina pectoris* on our case records, I think it is a mistake, except under special circumstances, to use this term to a patient as it has too alarming a significance. A simple explanation of inability of the heart to undergo strain works as well in obtaining coöperation of the patient.

The prognosis of this disease is, of course, tremendously uncertain. Patients may live for days only or may live many years. Some few patients do recover entirely, or to a great extent, as the result of the establishment of a collateral circulation. In general, the more severe and frequent the pain, the worse the prognosis. Angina coming on in sleep has a bad outlook, but, as was said before, nocturnal angina is frequently due to thrombosis.

There are two main types of cases seen, those in which the onset is gradual with a history of pain on strenuous exertion, perhaps years before, and the earlier attacks almost forgotten, and those in which the attacks develop in just a

few days or weeks and come on frequently on slight exertion. The latter patients generally have coronary occlusion in a short time. As a rule, the outlook is more gloomy in the presence of general arteriosclerosis.

Angina patients may die suddenly without thrombosis and may die suddenly any time in the first three or four weeks following thrombosis, regardless of how well they seem to be recovering. They may ultimately die of congestive failure or of some vascular accident such as cerebral hemorrhage.

The standard treatment during an attack is nitroglycerin crushed in the mouth. Doses of 1/200th of a grain are often effective and less liable to produce headache than the larger doses. Whisky is sometimes useful and morphia occasionally has to be given, but as before stated, the patient that requires morphine generally has thrombosis. For general treatment, we try to regulate the patient's life so as to avoid strain and fatigue, and try to get him to avoid hurry, worry and flurry. Rest in the middle of the day is desirable, as is plenty of sleep and long vacations. If the patient has the means, he is generally better off in a warm climate in winter. Theobromine sodiosalicylate and theophyllin enable some patients to do more without pain. A dose taken before retiring sometimes prevents attacks at night in those subject to them. Nitroglycerin may be used as a prophylactic for necessary light exercise such as dressing, walking a short distance, or before undressing and going to bed, in patients who experience pain from these exertions.

Finally we come to the use of surgery with those patients in whom the pain is very distressing and crippling. There are three types of operation performed: cervical sympathectomy, paravertebral injections of alcohol, and the newer operation of dorsal sympathectomy. These operations should be done on carefully selected patients only. The rapidly developing type with the threat of approaching thrombosis should be excluded. If the patient is in good condition, the more extensive operation of dorsal sympathectomy is the one of choice because of the resulting freedom from the annoying numbness and paresthesia which follows alcohol injections. If the patient's condition seems not to warrant so extensive a procedure, injection of the dorsal sympathetic ganglia with alcohol is safe in the hands of the surgeon who is skillful in the technique. I believe it is not yet fully established whether the operation may not, in addition to preventing the sensation of pain, produce some permanent coronary dilation and have some nitrite-like effect in preventing the ischemia which is the cause of the pain. Recently I had a patient who had four years of freedom from pain as the result of cervical sympathectomy, but who had terrific pain when he finally developed thrombosis. Even if some patients die sooner because they do not have the warning that pain gives to overexertion, the mental relief to them to be free from pain and the anticipation of it, is well worth a few months of their lives.

PRECORDIAL PAIN AND TENDERNESS*

BY PAUL D. WHITE, M.D.†

CARDIAC pain, whether or not we include angina pectoris, is very common and yet it has proved to be one of the most difficult of all symptoms to explain and to evaluate. The mechanism is still obscure in most cases, but fortunately the significance is becoming clearer, and at present even if we don't know the way heart pain is produced, we do know when it is important and when it is unimportant. The practising physician is not always aware that we do possess this knowledge for its acquisition has been gradual and very little discussed. I hope to tell briefly what we know and do not know about precordial pain, other than angina pectoris, and about precordial tenderness.

In the first place, we must bear in mind the two fundamental factors causing symptoms: first, and most important, the sensitiveness of the nervous system, and secondly, the presence of some disease or injury irritating the nerves. The truth of this relative importance of the two factors becomes evident when I cite two simple instances. A person may have no trauma or pathological process anywhere in the body (unless it be a functional or concealed lesion in the nerve cells themselves due to fatigue) and yet there may be symptoms of pain or discomfort due to an abnormal consciousness of a normal process, such as the beating of the heart, resulting from a marked lowering of the threshold caused by extreme fatigue as in so-called "nervous prostration". On the other hand, there may be extensive disease, as in the case of aortic syphilis, in an insensitive man with no symptoms whatsoever and yet with death close at hand. It is difficult for a doctor to learn these things from books, but he does become able by experience to determine quite accurately the degree of responsibility in the production of symptoms, on the one hand, of the patient's nervous sensitiveness, and on the other, of the disease process itself.

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Precordial pain, other than angina pectoris, about which you have already heard this afternoon, is almost never serious even though it may be quite disturbing. I shall, however, mention first two kinds which are serious but which fortunately are relatively rare compared to the thousands of instances of precordial pain which are trivial. These two types are, first and most immediately important, that due to coronary thrombosis and secondly that due to aortic aneurysmal dilatation, causing pain by pressure on surrounding tissues, especially when there is erosion of ribs or sternum.

Coronary thrombosis, except in unusually insensitive people, causes intense pain, sometimes the most severe pain known to man. In position and character it is exactly like the pain of angina pectoris, which is one very strong argument in favor of the theory of myocardial anoxemia as being the cause of angina pectoris. It differs from the pain of angina pectoris in being of much longer duration, usually quite a few hours instead of a very few minutes, in often seeming more intense, which, however, may be due to this very prolongation of the pain, and in some cases in being located or referred to the epigastrium as well as to the substernal region, thus giving rise to a possible confusion with acute indigestion of some type. Like angina pectoris, the pain of coronary thrombosis is rarely precordial alone, it is much more centrally located in the anterior chest wall.

I have emphasized the severity of the pain due to coronary thrombosis. In typical cases this is right; it is often necessary to administer in a single case from one-half to one grain of morphine within a few hours and in occasional patients there may be an associated syncope or collapse with vasomotor shock. But there are cases in which there is relatively little pain, the diagnosis of coronary thrombosis in such cases being established by other signs,—the course of the illness that follows, including the occurrence of fever, leukocytosis, dilatation of the heart, and typical electrocardiographic changes, or by postmortem findings.

Pain caused by pressure on surrounding structures by aortic aneurysms needs no fuller discussion here than to say that it is apt to be constant and wearing. Drug therapy, even with morphine is, therefore, inadequate. Antiluetic therapy is sometimes apparently helpful, but in an intractable case cutting or injecting with alcohol the dorsal nerve roots is the only effective measure. This type of pain is of ill omen for death is usually but a few months away.

We come next to a significant but not very serious type of precordial pain, namely, that due to *acute pericarditis*. Acute pericarditis is usually painless, the condition being discovered by the finding of a friction rub or of an effusion in an ill person. However, there are two conditions in which acute pericarditis will give rise to pain. One of these is fibrinous pericarditis involving the outer diaphragmatic and the other parietal pericardium. Pain due to this condition is usually aching in character but sometimes sharp, frequently with exacerbation on breathing. It is astonishing, nevertheless, how often pericardial friction rubs are unattended by pain, as after coronary thrombosis and with uremia.

The other variety of acute pericarditic pain is that due to an effusion. With much fluid in the sac, particularly if it has accumulated rapidly, there may be a sense of pressure and more effect on respiration than on the heart. Chronic adhesive pericarditis does not cause pain directly *per se*.

Then there are to be considered certain inconstant pain attacks, either aching or sharp in character, in the presence of heart disease but not due to the factors already cited. *Acute rheumatic infections* may be accompanied by sharp transient precordial pains ascribed to direct myocardial involvement. *Large weak hearts* found in patients with *chronic hypertension* or *mitral stenosis* may show heartache. This ache may perhaps be due to myocardial fatigue or to some unexplained factor. Often, however, it belongs in the last group, which will be discussed now, namely that associated with marked nervousness, which may happen to accompany organic heart disease, thereby causing confusion. To decide how much pain is due to heart and how much to nervous hyperexcitability requires careful analysis and much experience. Sedatives help more than anything else in the treatment of this type of pain.

The precordial pain most commonly encountered belongs in the last group now to be considered, namely, that *unassociated with any definite heart disease*, occurring at any age, and mostly in the *fatigued, hypersensitive individuals*. The pain in the region of the cardiac apex may be dull and last for hours at a time, or it may be sharp and brief, lasting only a second or two. The typical description of the dull, prolonged pain is "heartache", that of the short pain "stabbing, sticking pain", or when milder and often repeated, "pins and needles". Either variety, when severe, may be referred to a distance, chiefly up toward the left shoulder and even down the left arm as far as the fingers in a few instances. These kinds of pain are easily distinguished in nearly every case from the substernal oppression which characterizes angina pectoris. Their location, character, and duration, and the circumstances associated with their occurrence easily settle the point. The heartache and shooting pains are not, as a rule, primarily substernal; they are not choking sensations; they last a longer or shorter time than does angina pectoris; and they are more apt to follow exertion or excitement when the subject is tired rather than to interrupt exertion, as does angina pectoris. Their causation is usually un-

known but sometimes they are produced by premature beats as short stabs, or by paroxysmal tachycardia or paroxysmal auricular fibrillation, as prolonged aching. I would like here to mention two striking cases of angina pectoris when the patient, in addition to feeling discomfort on effort, suffered severe substernal oppression requiring morphine during paroxysms of auricular fibrillation. Such patients could easily be confused with patients suffering acute attacks of coronary thrombosis. Dr. Sprague and I shall publish a report of such cases later.

In addition to factors of fatigue and sometimes arrhythmia, indigestion of some sort may favor the occurrence of heartache such as that just described. The pressure upward of gas or food-filled stomach or intestines, or the increased metabolism following a hearty meal may induce heart consciousness or heartache entirely independent of pain referred upwards from below the diaphragm.

Whatever the mechanism may be, this kind of precordial pain is unimportant except as it may be uncomfortable. The patient may be entirely reassured as to the heart, but of course attempts should be made to eliminate the causative factors like fatigue, indigestion, excessive tobacco or coffee, and worry. A full discussion with the patient is often important, after a careful examination to rule out serious disease. Sometimes sedatives are helpful, in particular bromides or mild hypnotics. In the absence of heart failure, digitalis does more harm than good by increasing the force of the heart beat and aggravating the heartache. Strychnine also is contraindicated, as is caffeine. What is needed is sedation, not stimulation. A lazy holiday, plenty of sleep, and healthy exercise out of doors, along with sympathetic reassurance but not ridicule, do more than anything else to clear up heartache. Often if a similar amount of discomfort were felt anywhere else than in the region of the heart, the patient would hardly pay attention to it at all.

My own experience with precordial pain agrees entirely with that recently reported by Baker, an associate of Dr. John Parkinson in London, and disagrees with some of the familiar conceptions of the past. There may be heart disease present, and probably it is true that abnormal size, condition and action of the heart do favor somewhat the appearance of heartache, but they are not the essential factors. It is certainly the hypersensitiveness of the individual nervous system that is of prime importance. Baker noted that left inframammary pain was four times more common in females than in males; that its chief age incidence was in the late twenties and early thirties, and in the late forties and fifties; that it was frequently referred to the left scapula; and that it was three times more common in individuals without "organic disease" than in those with "organic disease". Baker's conclusion, therefore, was that, given such pain, heart disease is much more apt to be absent than present but that fatigue or neurosis is present. That is exactly my own experience.

Finally, I have a few remarks to make about precordial tenderness and its significance. By precordial tenderness I mean an abnormal sensitiveness to pressure over the precordium, especially in the region of the cardiac apex, elicited on routine percussion or palpation. This is not simply mammary tenderness since one finds a distinctly greater degree of sensitiveness in these individuals on the left side than on the right side in the absence of disease of the left breast. Almost exactly the same statement can be made regarding the clinical significance of precordial tenderness as regarding that of precordial pain, which has just been discussed. It is a very helpful sign in ruling out heart disease as a prime factor in the production of heart symptoms and ill health even though heart disease may also be present. I was not taught this fact originally, nor is this view held even now by the majority of medical men, but I have gradually learned the truth of this observation during the past ten years in practice. Mr. Kellogg of the fourth year class of the Harvard Medical School has helped me to analyze the records of my own private patients and has found that 8.7 per cent of nearly 4,000 patients with cardiac symptoms or signs complained of precordial tenderness. Of this group of 328 cases, 249 were females and 79 were males. The most frequent age was that of the menopause, that is in the late forties and early fifties when neurocirculatory asthenia was also prominent. The most common diagnosis was effort syndrome, or neurocirculatory asthenia, or cardiac neurosis, with or without organic heart disease. Precordial pain, palpitation, sighing, easy fatigability, and nervousness were frequently associated with this precordial tenderness, and more often than was coronary thrombosis or serious heart disease. A patient dying of coronary thrombosis may or may not have tenderness over the sternum or precordium; if he does, it is not the heart disease that causes it but the excessive sensitiveness of the nervous system that is fundamentally responsible, the heart disease, like worry, being, perhaps, the precipitating factor. A full report of this analysis of precordial tenderness will be published later by Kellogg and me.

In summary, I would say that even though we do not yet know the entire mechanism of the production of heart pain and of precordial tenderness, we do know the clinical significance of these symptoms and signs and I hope that my discussion of the subject today may prove helpful to you in the actual practice of medicine.

THE MECHANISM OF EDEMA FORMATION*

BY FRANK FREMONT-SMITH, M.D.†

GENERALIZED edema may be defined as an accumulation of water and salt in the organism. It occurs whenever the total fluid intake exceeds the total fluid output.

Edema fluid is a dialysate in osmotic and hydrostatic equilibrium with the blood plasma; furthermore, it contains much less protein than the blood plasma. Its composition is analogous to that of the cerebrospinal fluid. Edema fluid may be looked upon as an accumulation of normal tissue fluid.

The theory that edema is due to deficiency of plasma proteins is inadequate. Low plasma proteins should make the blood more filterable not only in the tissues, but in the glomeruli as well. Increased glomerular filtrate and diuresis should result from low plasma proteins. This should lead to dehydration and not to an accumulation of water in the organism.

The fact that marked variations in the amount of edema may occur without appreciable variations in the plasma protein level is another argument against the plasma protein level being the most important factor. The author has shown that patients with generalized edema fail to have the normal diuretic response to water drinking. Water drinking in such patients, however, results in a much more marked dilution of the blood than occurs normally. The ingested water, therefore, reaches the blood and is carried to the kidneys. Some antidiuretic factor prevents the diuresis. This antidiuretic factor is most important in precipitating attacks of edema. At the onset of acute infections there is a similar failure of normal persons to respond to water drinking with a normal diuresis and a similar dilution of the blood occurs. It is suggested that this antidiuretic factor in acute infections may frequently act as a precipitating mechanism in edema formation, for in both nephritic and cardiac patients, attacks of edema are often initiated by an acute infection. With low plasma proteins, edema will form much more rapidly when the kidneys fail to excrete water, and edema once formed will be more slowly removed. It is suggested that this failure of the kidneys to respond to water drinking with a normal diuresis is a fundamental factor in the formation of edema. The influence of the sodium ion and of acidity upon the diuretic response needs careful study.

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SUMMARY

Low plasma proteins should lead to diuresis and dehydration—not to edema.

Edema is due to a failure of the kidneys to respond to fluid intake with a normal diuresis.

When such failure occurs in the presence of low plasma proteins, edema will form rapidly and be reabsorbed slowly.

The onset of acute infections is associated with an antidiuretic factor.

Acute infections often precipitate attacks of edema.

DRUG TREATMENT OF THE EDEMA IN CONGESTIVE HEART FAILURE*

BY GEORGE D. HENDERSON, M.D.†

WHILE it is not the purpose of this paper to discuss the cause of edema, yet, a word might be said in regard to its etiology. Some years ago, when I was looking up this subject, I remember going through special articles and some volumes—in particular that by Nothnagel[1] (new then—1907). My reading led to the conclusion that the real explanation was not yet known. It was said then that: "The pathogenesis of dropsy has been explained in various ways, but none of the attempts at explanation have so far been able to satisfy all the conditions of the problem, probably because several causes are at work at the same time." Now, after some twenty-four years, a summary of the subject reads: "The physiochemical processes have been reviewed; namely, hydrostatic pressure, osmotic pressure, diffusion, transpiration, the possible inhibition of the water by colloids, etc. The effects of each of these forces are readily seen in simple systems outside the body, but in the complicated conditions within the body but little is known of their relative importance in the control of lymph formation and circulation." Facts such as the relation of salt to edema, the lowering of serum protein, the reversed albumin globulin ratio, and the like, are all instructive. Yet often the restriction of salt in no way influences the edema (Christian[2]), and also marked lowering of the body proteins may occur at times without any edema.

I quote from a rather exhaustive article (McLean[3]) regarding the relation of the renal cell to edema in cardiac disease. "In fact, it may

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be doubted whether any actual change in the ability of the cells to perform their function is ever of great importance in the usual picture of heart edema." Regarding the similarity of the fluids in the tissues and the blood plasma in cardiac edema: "These fluids, with the organic and inorganic substances, correspond to the blood plasma pretty closely and often are identical, though there is to be noted the loss of albumin from the plasma." In a recent article on the action of specific diuretics, Curtis[4] says: "Various theories have been proposed to account for the diuretic action of the specific diuretics. It is now generally taught that they act directly on the kidney. The view that they act extrarenally, however, is gaining adherents. The author's studies teach that the primary action of the specific diuretics is on the body tissues." He was working with the purin group of diuretics. In another recent paper the theory was expressed that one specific diuretic's action was on the glomerular tuft while another was on the cells of the uriniferous tubules. In Dr. P. D. White's recently published book we find the statement that the action probably takes place in the tissues and not in the kidney cell. As yet, therefore, we do not know all the facts regarding edema, nor the action of diuretics upon tissues or kidneys.

It may be said regarding the edema of heart disease, however, that it is primarily dependent upon diminished rate and volume of blood flow, which causes a diminished aëration in the lungs, a change of the normal balance of the blood gases, oxygen and carbon dioxide, and later a disturbance of the interchange of substances in the various cells of the body. Certain it is, that with the onset of congestive failure, and of this change, a lowering in rate and volume of the blood flow, edema sometimes occurs, and that, as the failure disappears, the edema usually goes.

The characteristic edema of heart disease, starting in the remote parts of the body and gradually progressing upward, is best fundamentally explained on the primary mechanical theory of retarded circulation. Feet, ankles, legs, thighs, hips, back, hands, arms, abdomen, and chest is the common course of its appearance. The pleuritic accumulation is usually on the right side, and is supposed to have some relation to pressure on the azygos veins on this side by the enlarged right heart, just as ascites may be related to portal congestion and obstruction. The pulmonary edema is said to be due to a disturbed mechanical balance between the weakening left heart and a right heart still working fairly well. These explanations are unsatisfactory, but with the theoretical ones such as diffusion, osmotic pressure, etc., they must be all we have to offer for the present.

I am to discuss drugs in the treatment of cardiac edema, yet drugs are not the first things to be thought about.

Physical rest alone often will remove all edema.

Rest plus a laxative will more often accomplish this same effect.

Rest secured by morphine will at times tip the balance in favor of its complete removal. A little stress may be put on the use of morphine in congestive failure. It is the only contender with digitalis, but it is a real one, and while not directly influencing edema, is a wonderfully useful adjuvant.

When mild, exercise may be quite useful.

Sweating is of doubtful value.

The above methods, together with such measures as paracentesis and the use of Southey's tubes, are of distinct value, and all have something, or much, to be said in their favor. Yet, when rest has been tried and the edema persists, we turn to drugs even before Southey's tubes or paracentesis are used. No reference to drugs in the treatment of edema in congestive failure would be complete without first mention of *digitalis*. Not only is this the most valuable of all drugs in the treatment of *congestive heart failure*, but about 50% of all cases of edema are relieved by its proper use.

DIGITALIS

While other drugs are named as being in the digitalis group, one needs but to mention some of them, strophanthus, apocynum, squill, convallaria, coramine, etc. Some of these are useful. Nevertheless when digitalis is properly used, to the point of complete digitalization and followed by the proper maintenance dose, and fails to achieve results in the relief of edema, none of the other members of the group will succeed. Statements to the contrary by individuals and by drug manufacturers have been found by experience to be untrue.

Digitalis may be given in the form of infusion, tincture, the powdered leaves in pills, tablets, and suppositories, and alcoholic extracts in sterile ampoules for hypodermic and intravenous use. All of these forms are used with success. One needs only to be sure of the potency and proper dosage of the preparation used. The infusion and the tincture deteriorate more rapidly than the powder, and their dosage is more difficult to control. The dose of the powdered leaf in pill or tablet form is very accurate. For these reasons the powder in pill or tablet form is the preferred way of using the drug, and justifiably so. There is no longer any need for the use of expensive preparations. In any ordinary community the less expensive forms are readily at hand, and in every way these are just as efficient as the more expensive ones. The ampoules for hypodermic and intravenous administration are of no advantage

when the stomach is retaining the mouth dosage, except in emergencies where time is an important factor and rapid digitalization desirable. As much as 5 c.c. (7½ grains) and even more may be used intravenously, not hypodermically, and the dose repeated in a few hours if necessary. The too common practice of giving repeated doses of 1 c.c. hypodermically is to be discouraged, even condemned, for its action in this manner is too slow and too uncertain in emergency. Moreover it is often quite painful, and the dosage by mouth is just as efficient. A large rectal dose, once a day, is at times much to be preferred to the repeated hypodermic injections. The drug is so well absorbed when given by rectum that the dose is the same as that by mouth.

"Digitalization" consists in the giving of enough digitalis within a given time to produce full physiological effect. Full physiological effect is usually necessary to produce the most satisfactory results in the removing of cardiac edema.

An attempt has been made to standardize dosage, and 1½ to 2 grains for each ten pounds of body weight has been found to be on the average the amount necessary for digitalization. While the dosage may need to be varied somewhat, this method has been found a satisfactory one with which to start treatment, changes being easily made as experience shows them to be necessary. It has been found that the body excretes on the average 1½ grains of the drug each day. As it takes 3 to 10 days for digitalization, depending upon the rapidity with which the drug's action is needed, it will be necessary to add to the total amount used 4½ to 15 grains in order to produce complete digitalization in the first place, and after this to continue with 1½ grains a day (maintenance dose) to keep up the effect. One must be careful to know how much of the drug the patient has had recently before re-digitalization is begun, for this knowledge should affect the amount needed.

Briefly this is the way to give the drug in order to get its proper effect. Further details of the variation of the method can be found in various books and articles, the above mentioned book (White) giving it in full. The signs of the physiological effects are well known, as well as danger signs in certain serious heart conditions and in over-digitalization. With this knowledge the undesirable effects of its use can in large measure be avoided. Therefore the danger in its use is not great, and untoward results not often seen.

In those cases where edema remains after the proper use of digitalis, we should resort to other methods for relief, and the use of *diuretics* is one of these methods. The drugs in more common use fall into three groups. First, the weaker group consists of calcium chloride, ammonium chloride, ammonium nitrate, urea, and other similar drugs. The action of the first three is said to be associated with the production of a mild acidosis.

Secondly, a more active group, the purins, caffeine, theobromine, theobromine sodium-salicylate (diuretin), theocin (theophyllin), and more recently, theocalcin (theobromine calcium-salicylate).

Thirdly, a still more active group, the mercurials, calomel, and more recently, novasurol, salyrgan, and neptal.

The first group, calcium chloride, ammonium chloride and nitrate, etc., are used in fairly large doses, 15 to 20 grains t.i.d. or q.i.d. and for fifteen to eighteen days at a time. They have been employed in much larger doses, a series of cases having been reported where calcium chloride was used in doses as high as 150 to 300 grains a day, and with very satisfactory results. They are rather unpleasant to take, but are well worth trying. Their action begins after two or three days. Personally, I am not enough of a physio- or biological chemist to know when any one of these is particularly to be used, or whether they are in any way related in a given case to the calcium or any other metabolic condition in the body, and whenever I have used this group and have failed to relieve my patient, I try another; my own personal favor is with calcium chloride. They are not usually effective after the more active groups mentioned above have failed. Not long ago, in a case where there was well-marked congestive failure, in combination with renal disease and diabetes mellitus, at Dr. White's suggestion, I used calcium chloride, 20 grains q.i.d. On the third day, diuresis began and lasted long enough completely to relieve the patient of all his edema, including an ascites. The loss was some 2 to 3 liters a day and was estimated in weight to be a loss of 50 to 60 lbs. Salyrgan had been reported ineffectual in this case, but later I found that it, too, was effectual for relief of the edema that reappeared.

Of the *purine group*, caffeine and theobromine are the least effective and are less often used. Theobromine sodium-salicylate (diuretin), in comparison with theophyllin (theocin), while said to be less disturbing, is not so effectual, but should be used and is a valuable remedy. All of these drugs may produce toxic symptoms, chiefly nausea and vomiting. They have a bad taste and Dr. James O'Hare's opinion is that they should always be given in a salol coated capsule. In a certain percentage of cases, one of these drugs will be successful, causing the disappearance of the edema persisting after digitalization. Theobromine sodium-salicylate is given in doses of 7 to 15 grains three times daily. Theophyllin is somewhat more active

and is used in smaller doses, 3 to 5 grains, three times daily and will bring results when the former drug (diuretin) has failed. This group, because of its stimulating effect upon the central nervous system, may have to be discontinued after about three days. If they prove effectual, they may be repeated after a week or two until the edema is gone or they have ceased to be active. At times it has been found that by a single dose a day, 7 to 15 grains of diuretin or 3 to 5 grains of theocin, a noticeable diuretic effect may be continued. When found ineffectual once, these drugs will rarely be found useful when repeated, and likewise, when these doses fail, larger ones are of no use.

Recently, a newer preparation, theocalcin (theobromine calcium-salicylate), has been added to this group. The results have been very good and from reports, this drug appears to be more effectual than either of the last two mentioned (diuretin and theocin). It is given in doses of 15 to 20 grains three times daily. The toxic effects are less, and the drug has proved effectual when both diuretin and theocin have failed. Stewart[5] speaks enthusiastically about its use, and regarding its toxic effects, says that these are not marked. In fact, he goes so far as to say that its toxic effects are so mild that, if it is effectual in producing diuresis, it can be kept up so long as the diuresis lasts; that it only becomes toxic when ineffectual in producing diuresis, or when its administration has been kept up after it has ceased to work. With the use of these purin diuretics, some one-half of the edema remaining after digitalization has failed, will be relieved.

The mercurials. The diuretic effects of calomel have long been known. It has been used alone and also, for its diuretic effect, has been combined, in pill form, with such drugs as digitalis, squill, and opium. The use of calomel, as well as of novasurol and salyrgan, must be watched for toxic effects upon the mouth, intestines, and kidneys; in the latter case, casts, albumin, and red cells may appear. Calomel is given in doses of one grain or more, occasionally three times daily. Of the two newer mercurials, novasurol and salyrgan, the latter is said to be somewhat less toxic and is apparently more effectual. These drugs are given in doses of from 0.5 to 2 c.c. of a 10% solution, intravenously. The smaller dose is to test its toxic effect, the usual dose being 1.5 to 2 c.c. of the 10% solution. These drugs have not been found effectual if repeated more often than once in 3 to 4 days, and larger doses are not of special value. The effect is noticeable in a few hours, lasts for 24 to 36 hours or a bit longer at times, and is often remarkable. In a number of instances, I have obtained from 2 to 5 liters in 24 hours, when other diuretics have failed to remove edema. A fact worth adding is that these last two drugs will remove ascites in such conditions as hepatic cirrhosis, peritoneal carcinomatosis, and chronic peritonitis, and may do away with the use of abdominal taps, when these have been necessary to keep the patient comfortable. I have under my observation now a man who had general edema and ascites. Upon digitalization, he lost all of his general edema, but the ascites remained. Following the first 1.5 c.c. of salyrgan, he lost over 5000 c.c. in the first 24 hours, and that much of his ascites went with it. In this case, the congestive failure had lasted long enough for an hepatic cirrhosis to develop, which I thought explained the ascites present.

At times, ammonium chloride or nitrate has proved helpful when used with salyrgan, and will cause an active diuresis when either alone will not. Under such circumstances, these drugs are used in doses of 20 grains daily and are started two to three days before the intravenous injection of salyrgan. A warning should be added regarding the use of salyrgan and novasurol—if spilled into the tissues, a slough may easily occur, and occasionally thrombosis. In comparison with these diuretic drugs, digitalis is not effectual except in the edema of congestive failure and is not found to cause any diuresis when there is no edema present. The theobromine group is useful in both cardiac and renal types of edemas, as are also the mercurials and the group of drugs such as ammonium and calcium salts.

In reviewing some of the recent literature regarding edema and the use of diuretics, there still seems to be some disagreement as to which one is the best and the most reliable and, too, what the proper doses are. This will probably not be so when they have been more used. Digitalis should be used first in treating edema of congestive failure because of its great value to the failing heart. When the edema persists, in the order of their efficacy, calcium chloride and ammonium salts may be tried. When these fail, and more active drugs are needed, the theobromine (purin) group may be used. And lastly, when still more active diuretics are needed and after the previous ones have failed, the salyrgan type may prove of great value. However, Marvin[6] says that, when properly used, there is little, if any, choice between the purin group and the mercurials, both producing about equally good results in the same proportion of cases, though the mercurials more often help after the others have failed. Stewart[5] records the oral and intravenous use of calcium chloride in cardiac edema with and without the use of digitalis; in 50% of a short series he secured complete relief of the edema.

I have not spoken of the treatment of pulmonary edema, such as occurs in the form of basal râles in the course of congestive failure,

or when it is found in the acute form, as an acute edema of the lungs, appearing suddenly in a few minutes, sometimes becoming rapidly fatal. The first type is usually relieved during the improvement that is general with primary digitalization of the patient, and needs no special mention. In the acute form the well-known use of morphine sulphate and atropine seems to be the best method. Digitalis is often of benefit in some of these cases, and when used to advantage, should be given intravenously. Some have advised its use hypodermically, but if employed at all in such cases, I should think the intravenous route preferable, as the hypodermic use is too slow.

Lastly, a word is to be said about laxatives and cathartics. These are very useful, for not only do they help in the removal of fluids from the body, but they also clear the intestinal tract of contents which may be disturbing factors in congestive failure. I think no cathartic holds any special rating. Magnesium sulphate is as good as any. Calomel in 3 to 5 grain doses—at times repeated—and followed by one of the salines, is helpful and may exert some of its diuretic action. The other well-known laxatives and cathartics may be employed. Great judgment should be exercised in their use for there can be no doubt but that too active purgation in a sick cardiac patient, with or without edema, has been the cause of death; this is also true of sweating for this same purpose.

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LOCAL TREATMENT OF EDEMA IN CONGESTIVE HEART FAILURE*

BY BURTON E. HAMILTON, M.D.†

VARIOUS methods for directly removing edema of the legs, belly wall and so forth have been attempted since antiquity. This is not surprising, for patients, themselves, when edema fails to clear or increases, frequently ask if there is no method of taking it away by tapping, or if there is not something that one can put on to draw it away.

Most of us who are now actively engaged in the treatment of heart failure know comparatively little, from personal experience, about methods of relieving edema by local treatment. A small number of active physicians have used, and still use, one or another of the various methods of treating edema locally. Some of the older physicians who have employed these methods and have now abandoned them state that, in their opinion, the reasons for giving them up are inadequate and that, in selected cases, they may still have a place in therapeutics.

The importance, usually in the following order, of complete rest in bed, diet, proper doses of digitalis and other diuretics, in treating congestive heart failure, is now generally appreciated. Justly, other methods of reducing edema in heart failure have been relegated to the background. Perhaps, as a result of this usually just attitude I, for one, am confident that, in certain cases, I have prolonged discomfort and, possibly, in a few cases may have failed to take advantage of an opportunity to prolong life by not removing demonstrable fluid in the pleural cavities in heart failure with edema *as soon as the hydrothorax was demonstrable.*

HYDROTHORAX IN HEART FAILURE. In all cases of heart failure, demonstrable hydrothorax occurs in a very small percentage. Barić[1] found it in 10% of a series. In my experience, it is less frequent. Many observers have noted that more often than not it is unilateral, and that, when unilateral, it is more commonly found on the right. When bilateral, the amount on the right is usually greater. This peculiarity of hydrothorax in heart failure has stimulated a good deal of speculation and investigation. So far, nothing particularly important has come from this investigation.

The fluid is usually clearly a transudate but, in time, and with repeated tappings,—even if these are done with aseptic precautions,—the fluid tends to resemble an exudate. It is occasionally blood-tinged.

Where hydrothorax is demonstrable in heart failure, the amount is usually greater than one expects. It is the rule to find more than two pints.

It is generally agreed that hydrothorax in heart failure directly aggravates dyspnea and adds to the work of the heart. Its removal should not be considered as simply directed at a reduction in the amount of edema, and post-

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poned until after rest, diet and diuretics have been tried. Hydrothorax should be treated as soon as it is demonstrated. Some amelioration of symptoms usually follows at once.

It is possible for hydrothorax to develop quickly in cardiac patients. It is sometimes reproduced with great rapidity. Vaquez[2] reports a case in which the patient was tapped forty times. Unless this is borne in mind, hydrothorax may be overlooked.

Aspiration of hydrothorax in congestive heart failure is usually a safe procedure. Occasionally, unpleasant symptoms follow or occur during aspiration. A quickly repeated cough, increasing dyspnea, and edema of the lungs may occur. It is well known that, in very rare cases, aspiration of a hydrothorax has been followed by sudden death. Actually, for years, I have aspirated hydrothorax, where I have found it in cardiac patients, without any disturbing symptoms and usually with definite amelioration of dyspnea. The last two patients have shown disturbing symptoms. The first symptom, in these cases, was a grunting cough; later, dyspnea and complaints of tightness in the chest. I continued to aspirate both of these patients for a short while after the first cough. I suggest that a dose of codeine be given routinely before aspiration and that the aspiration be stopped at once when the patient first gives a grunting cough or complains of tightness in the chest.

I have found that simple siphoning is effective. It is, of course, simpler than the use of vacuum bottles.

Ascites in congestive heart failure is not uncommon, but it is usually of much less importance than hydrothorax. As a rule, the ascites is not sufficient to cause marked distention of the belly wall. Pressure symptoms are not evident. Removal of the fluid is not followed by a great change. Usually the amount obtained is disappointing. It is not necessary to consider paracentesis for ascites as of primary importance in the treatmert of heart failure whenever it occurs. In rare cases, the amount of ascites is great enough to cause tautness of the abdominal wall and pressure symptoms. This is more likely to be the case in patients who have prolonged congestive failure, or repeated congestive failure with chronic liver changes due to congestion, or with coincident chronic liver changes. Where a tense abdomen is associated with ascites in congestive heart failure, early paracentesis is indicated. The fluid is of the same character as that in pleural effusions in heart failure.

A variety of methods have been tried for the removal of edema not in the body cavities. One can find, in recent literature, reports of successful application of each of the following methods:—

1. Massage, Bandaging, Pressure

It is a fact that massage may cause the disappearance of light edema in suitable cases. It may make hard edema softer. It may add to the comfort of the patient. Needless to say, it should be done gently and skillfully, in a manner not to disturb the patient.

Occasionally, bandaging will relieve discomfort in a swollen limb. Carnot[3] describes a method for relieving the discomfort of edema and aiding in its absorption by wrapping a bicycle tire around the limb and inflating it slowly. This same writer describes a method of relieving edema in a limb by a steady annular pressure with both hands, moving the pressure slowly from below, upward.

I have had one startling example of the value of massage. The patient was a man, aged 78, with a senile and hypertensive heart and chronic nephritis with gross edema from his feet to the level of his navel. Though I made him comfortable with the usual methods of treatment, he failed to increase his urine output for more than four weeks and his edema remained stationary. Vigorous massage for 15 minutes, three times each day, caused marked diuresis. When the treatment was stopped, the urine output fell. Resumption of massage was immediately followed by diuresis until the edema was completely gone.

Such methods are of relatively minor importance.

2. Osmosis

In the literature, one occasionally finds reference to methods for reducing edema by osmosis. In particular, Carnot[3] refers to a solution of salt and glycerine applied on a dressing to an edematous leg. He says that he has seen a difference of several centimetres in the calibre of a swollen leg within twenty-four hours after such an application.

A few days ago, Dr. Templeton of Orleans, Vermont, told me that, since reading an article on this subject some twenty-five years ago, he has used this method on occasional patients, apparently with good results. He uses a solution of magnesium sulphate.

3. Scarifications, Incisions, Punctures and Trocars

Scarification of the skin in some form or other has often been used for the reduction of edema. A method described by Carnot is to place the patient in a chair with the legs pendent. Disinfect the skin. Make from four to eight small scratches; for example two on each ankle and two on each calf, or anywhere where there is marked edema. The incisions should be deep enough to reach the subcutaneous tissues. Apply absorbent, sterile bandages. Keep the patient in a sitting position as long as is consistent with comfort.

Many have advised draining edema of the legs by a simple *incision* several inches in length. Sépet[4] states that one of his patients with stubborn edema developed anxiety psychosis and melancholia. In attempting suicide with a razor, he made a deep incision on each thigh. From these two wounds he had a veritable hemorrhage of serum. His edema disappeared and his other symptoms improved. This adventure stimulated Sépet to try incisions on suitable cases. He treated 14 cases with stubborn edema by an incision seven or eight centimetres in length, deep enough to get into the subcutaneous tissue, on the upper and outer surface of the thigh, in a direction parallel with the femoral bone. He used ethyl chloride locally for an anesthetic and applied absorbent dressings. He found that the wounds healed quickly without infections. Vast quantities of serum were obtained.

Among others, Carr[5] recommends *multiple punctures* of the skin with a large, straight surgical needle. The punctures are made usually in the lower part of the leg and are covered with sterile gauze, the patient placed in a sitting position with the legs hanging.

The use of *Southey tubes* has recently again become somewhat popular locally, largely as a result of an interesting article by Bland and White[6]. Briefly, silver cannulae 1½ to 2 millimetres in diameter and about 4 centimetres in length are inserted by means of a trocar. The cannulae are fenestrated near the tip. When the trocar is removed, rubber tubing can be fitted over the ends of the cannulae to conduct the fluid to a suitable receptacle. They are inserted with aseptic precautions and, if desired, after local anesthesia. They may be inserted in any suitable edematous place, at right angles to the surface of the body. They may be left in place for an indefinite period, but usually it is wise to remove them after thirty-six to forty-eight hours. While the cannulae are in place, there is usually no leakage about them.

There are advocates for each of these methods. Case histories have been given showing that satisfactory amounts of fluid can be obtained. As much as 30 litres in twenty-four hours has been reported.

Each method is open to the usual objections of uncleanliness, discomfort and danger of infections. The advocates of Southey tubes are apt to call attention to the fact that this method keeps the patient dry and is clean. They forget that the use of the Southey tube is associated with punctures. The punctures are inevitably present as soon as the Southey tubes are removed. The neatness, dryness and relative asepsis of the method only lasts as long as the Southey tubes are in place.

Dr. Greene Fitzhugh and I have recently treated a patient,—a young woman with chronic rheumatic heart disease, chronic congestive failure and obstinate edema,—by puncture holes alone in one leg and Southey tubes in the other. The puncture holes have averaged about 350 grams of fluid per day. The Southey tubes have averaged about 390 cubic centimetres per day. The punctures made by the Southey tubes, after the tubes were removed, have yielded 490 grams per day. Though the Southey tubes have been removed 15 days, drainage continues through the puncture holes they left.

We should bear in mind that there are well-known older internists, still practicing, who have used these methods and have abandoned them as not desirable.

Dr. Henry Jackson states that he has used scarification of the skin in edema, but abandoned it. He advises against its use because he feels that the results do not justify the chance of causing discomfort by infection. He believes that this objection holds in the other methods cited above.

Dr. Elliott P. Joslin states that, though he is familiar with these methods, he has not been tempted to use them because he does not think they are of real value.

Dr. William H. Smith, when assisting Dr. Frederick C. Shattuck, saw these methods tried repeatedly. He states that Dr. Shattuck abandoned them and that he, himself, has not used them because of troublesome infections which they saw following their use.

Dr. George Sears, on the other hand, states that though he has not used these methods, he feels that he failed to use them chiefly because of prejudice aroused by the unfortunate experiences of others, and that there may well be some place for them in therapeutics.

Two other methods of treating edema deserve minor consideration:

Leeches. Dr. Sears and, to a less extent, Dr. Jackson believe that leeches may be used reasonably in the treatment of some cases with congestive heart failure, with or without edema. They are useful, not only in drawing blood, but because where there is edema present, serum continues to flow from the puncture holes made by the leeches after they have been removed, particularly if warm, wet dressings are applied.

It is felt by some that leeches do not make infection at all likely and they are not uncomfortable. Dr. Jackson tells me that Dr. Shattuck was once an ardent advocate of their use believing them efficient and harmless from the point of view of sepsis.

A method which I have not recently heard about nor seen is *sweating*. This was used routinely in cases of severe nephritis and of eclampsia at the Boston City Hospital when I was a house officer. The usual procedure was heaters and blankets, with the patient sitting up in bed, with an icecap on the head. Hot, wet packs may be used in place of dry heat. There was a tradition that edema of the lungs sometimes followed this treatment, but I never saw any unpleas-

ant results. I do not know of anyone who is using this method now.

With the possible exception of leeches, it is evident that we may conclude, from the experience of others, that infection may follow any treatment of edema that depends on breaking the skin. Every such method is accompanied by leakage of serum which can be collected only by bandages. We may conclude readily, from trial and reported cases, that large amounts of fluid can be evacuated from edematous patients by any one of the surgical methods cited above. The difficulty is to estimate the advantages and the disadvantages.

In 1918, I used Southey tubes on an aged woman, with a senile heart, auricular fibrillation, chronic failure and obstinate edema. This treatment was carried on by Dr. Edward L. Young of Boston. Almost two years later, the patient died. Throughout this period, Southey tubes were used almost constantly. During this time, she required the entire attention of her husband, who was a retired professor, and of a nurse. The husband told me that the household laundry bills approached $6.00 per day for these two years. The two years of life were a great burden to the patient's family and, apparently, not associated with any satisfactory degree of comfort to the patient. Those who watched the case, including myself, felt that we made a mistake in adding this method to her treatment even though she had no troublesome infection and was rid of enormous quantities of serum by means of the tubes and the puncture holes they left.

However, such effective methods of removing stubborn edema suggest that there may be occasional cases where they may prove definitely useful in prolonging life and relieving suffering at the same time.

It is clear that gentle massage and the osmotic methods of relieving obstinate edema are not open to serious objection. At least, because of their comparative harmlessness and simplicity, they should be borne in mind. I feel that the osmotic methods should be tested further; the reports of their value that I have seen appear inconclusive.

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THE PUBLIC HEALTH NURSE

According to the United States Public Health Service, the public health nurse is a constructive force for the betterment of the individual, the family, and the community health. Her work has three aspects: It is educational, preventive, and curative. It is not a simple task to uproot habits which have become deeply entrenched, especially when they are to be supplanted by other habits which are or seem to be less convenient or comfortable. Here is the public health nurse's first opportunity and responsibility — to explain and demonstrate to individuals the principle of personal hygiene and to help them apply it in their everyday living in their homes and schools and their workshops. Her second function is that of prevention of disease through early recognition of symptoms and through persuading men and women to seek medical advice before they are ill. Preventive measures include the supervision of expectant mothers, supervision of the health of babies and preschool children, efforts to have the physical defects of children diagnosed and corrected, to assist in improving the sanitary conditions of homes and school buildings, to find undiscovered cases of tuberculosis, scarlet fever, and other communicable diseases, and to stimulate the acceptance of protective measures for the prevention of diphtheria, scarlet fever, and typhoid fever. These and many other preventive activities are part of her daily routine.

The third function of the public health nurse is curative, assisting in restoring the sick to health. Actual nursing care in the homes of the poor often is part of the work of a public health nurse, and in this connection she not only cares for the indigent sick but teaches some member of the family how to care for the sick in her absence. Illness of one member has its effect upon the health of others; and so hand in hand with caring for the sick go the teaching of health and the prevention of disease.

The influence of the public health nurse should be far-reaching, because of her intimate contact with the home, and because of her ability to help with her own hands when there is sickness or suffering. Perhaps no approach gives the public health nurse a better entry into the homes of the people than that of caring for the sick. We have found that demonstration to the family of the practice of cleanliness, of sick-room hygiene, of skilled nursing care, does more to convert them almost unconsciously to a more healthful way of living than could be done by mere verbal instruction, no matter how carefully given.

Public health nurses are usually employed in the local health organization, the funds being supplied by either private or public agencies. Every town, city and county should make her services available as a part of the activity of its health department. Of course, this means some outlay, either by the taxpayers or voluntary community group, in the same way it means an outlay for the business man to have a lawyer to keep him clear of the courts.

ACHIEVEMENT WEEK

DURING the week of April 3 the Massachusetts Medical Society, the Massachusetts Branch of the American Society for the Control of Cancer, and the Massachusetts Department of Public Health conducted a cancer campaign. The week was known as Achievement Week and the results of the five-year cancer program were discussed at length.

Cured Cancer Clinics were held and 175 patients were shown at the clinics. Both physicians and dentists were invited to participate. The attendance at the clinics was as follows:

Free Hospital for Women	35
Palmer Memorial Hospital	42
Pondville Hospital	46
Collis P. Huntington Memorial Hospital	40
Massachusetts General Hospital	40
Boston Dispensary	50
Harvard University Dental School	47
Tufts College Dental School	45

At a dinner meeting on April 5 Dr. Halbert G. Stetson and Dr. William H. Gilpatric gave addresses; Dr. James Ewing spoke on "What Can the Medical Profession Do About Cancer?" Mr. John Finley spoke on "The Importance of the Informed Public Opinion"; Dr. Arthur H. Estabrook featured a Dental Exhibit. Dr. William P. Graves presided. This meeting was attended by 157 physicians and dentists.

At the luncheon meeting held on April 6 the following addresses were given: "What Can Surgeons Expect in the Way of Guidance in the Treatment of Cancer from Pathologists?" by Dr. Simeon B. Wolbach; "How Best to Utilize Present Cancer Resources" by Dr. Robert B. Greenough; "A Hopeful Note in Cancer" by Dr. Timothy Leary; a summary of the course by Dr. William P. Graves. Dr. Channing C. Simmons presided. There were 126 physicians and dentists in attendance.

On Thursday, April 7, Dr. Bloodgood conducted a clinic at the Worcester City Hospital. On Tuesday morning, April 5, Doctor Simmons conducted a clinic in Lawrence.

Public meetings were held in the various clinic cities with the following attendance:

Boston	1200
Brockton	200
Fitchburg	150
Gardner	600
Lawrence	60
Lowell	400
Lynn	200
New Bedford	300
North Adams	150
Pittsfield	60
Springfield	100
Worcester	125

During the week newspaper publicity was as follows:

	No. of Inches
Boston	220
Brockton	82
Fitchburg	105
Gardner	105
Lawrence	108
Lowell	135
Lynn	146
New Bedford	109
North Adams	102
Pittsfield	52
Springfield	220
Worcester	165
Pondville	22

REPORT OF THE CURED CANCER CLINICS HELD ON APRIL 5 AND 6, 1932, AT THE MASSACHUSETTS GENERAL, COLLIS P. HUNTINGTON MEMORIAL AND PALMER MEMORIAL HOSPITALS, THE FREE HOSPITAL FOR WOMEN, AND THE STATE CANCER HOSPITAL AT PONDVILLE*

BY ROBERT B. GREENOUGH, M.D.,† WILLIAM P. GRAVES, M.D.,† CHANNING C. SIMMONS, M.D.,† DANIEL F. JONES, M.D.,† ERNEST M. DALAND, M.D.,† AND HARRY F. FRIEDMAN, M.D.†

THE clinics at the above hospitals are briefly summarized below.

At the Massachusetts General and Huntington Hospitals, and the Free Hospital for Women all the cases shown represented five-year cures of cancer. The Palmer Memorial Hospital and the State Hospital for Cancer at Pondville were opened less than five years ago and the accepted five-year period had not elapsed in the majority of the patients demonstrated at these clinics. The cases were shown, however, to illustrate the different forms of the disease and the recognized best method of treatment. At the Boston Dispensary demonstration of cured cases and methods of treatment were shown.

A few cases of cancer of each of the more common organs or regions were shown at the clinics to illustrate the symptoms and treatment of cancer in these organs.

The diagnosis of all the cases shown was verified by microscopic examination of a specimen removed and, with few exceptions, the slides were reviewed by a committee composed of three

*Read at the Cured Cancer Clinic Meeting held in Boston, April 5 and 6, 1932.

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pathologists, Drs. S. B. Wolbach, Tracy Mallory and Shields Warren.

In demonstrating the cases the salient points regarding the early signs and symptoms as well as the methods of treatment both for cure and palliation were brought out.

The following cured cases of cancer were shown:

MASSACHUSETTS GENERAL HOSPITAL—58 CASES

Skin	4	Osteogenic Sarcoma of the long bone	2
Lip	3	Sarcoma of the jaw	1
Buccal Mucosa, including Tonsil	9	Penis	1
Stomach	3	Teratoma of the Testicle	1
Large Intestine	6	Carcinoma of the Bladder	1
Rectum	5	Carcinoma of the Kidney	1
Breast	5	Hypernephroma of the Kidney	1
Ovary	4		
Body of the Uterus	4		
Uterine Cervix	5		
Vulva	2		

COLLIS P. HUNTINGTON MEMORIAL HOSPITAL—29 CASES

Skin	7	Urethra	1
Lip	4	Teratoma of the Testicle	2
Buccal Mucosa, including Tonsil	6	Benign Giant Cell Tumor of the jaw	1
Cervix	4	Malignant Lymphoma	1
Penis	2		
Bladder	1		

PALMER MEMORIAL HOSPITAL—24 CASES

Five-Year Cures—7 Cases

Tongue	1
Sigmoid	1
Rectum	5

Cases living without disease less than five years, demonstrating methods of treatment

17 Cases

Penis	1	Colon	1
Bladder	2	Uterus	1
Ureter	1	Hypernephroma	1
Breast	2	Skin	2
Rectum	3	Malignant Lymphoma	3

THE FREE HOSPITAL FOR WOMEN—12 CASES

Cervix	4
Body of the Uterus	4
Ovary	1
Vulva	2
Breast	1

In addition, the method of application of radium to cancer of the cervix was demonstrated on three cases. A fourth case was examined but immediate biopsy failed to show cancer and the lesion was treated surgically.

THE STATE CANCER HOSPITAL AT PONDVILLE—46 CASES

Cases living less than five years demonstrating methods of treatment

Skin	26	Vagina	1
Penis	2	Cervix	2
Breast	6	Body of Uterus	3
Lip	2	Fibrosarcoma	1
Tongue	1	Hypernephroma	1
Upper Jaw	1		

BOSTON DISPENSARY—9 CASES

Five-Year Cures—3 Cases

Neck	1
Cheek	1
Tongue	1

Cases living without disease less than five years, demonstrating methods of treatment

6 Cases

Cervix	2
Lip	2
Breast	1
Tongue	1

The results of treatment of cancer of the various regions as presented at these clinics are summarized in Table 1.

The figures given represent the experience of these hospitals when available but otherwise were derived from reports from other well-known cancer clinics. The importance of early diagnosis and prompt energetic treatment is emphasized by these figures, and while it is admitted that all cases of cancer cannot be cured it is obvious that with the methods of treatment available at the present time our results can be improved at least 100%.

TABLE 1

THE CURABILITY OF CANCER

Cases Living Five Years Without Disease Are Classed as Cured

Situation	Curability All Cases	Primary Operative Cases	Early Cases
Skin	65%	—	95%
Lip	50	68%	88
Tongue and Mouth	5	30	38
Stomach	4	24	24
Colon	10	19	49
Rectum	23	55	65 plus
Breast	31	36	62
Ovary	20	29	40
Fundus	72	76	88
Cervix (Radium)	20	66	75
Vulva	10	—	30
Bone Sarcoma	—	10	—
Penis	10	25	50
Testicle	4	15	30
Bladder	—	—	25
Prostate	0	0	0
Kidney	less than 20	—	—

CANCER OF THE SKIN

Suggestive Symptoms

A scabbing area later becoming ulcerated, usually on the face, or an obvious change in appearance of a preëxisting skin blemish such as a warty growth, mole or fibrous nodule.

Methods of Investigation

(a) Inquiry as to occupation, particularly in regard to irritation. It is recognized that exposure to certain coal tar derivatives, as well as radiation, predisposes to cancer of the skin. The ingestion of arsenic, as Fowler's solution, over a long period of time is often followed by keratoses and later cancer.

(b) The possibility of the ulcer being syphilitic should be considered.

Procedures to be avoided

(a) Delay in instituting treatment
(b) Biopsy, unless syphilis or tuberculosis is strongly suspected, is unnecessary. If the diagnosis is not clear it is usually better to excise the entire lesion.
(c) Radiation treatment if the lesion is situated in close proximity to cartilage.

Five Year Cures in early favorable cases

By Radiation 84% (Huntington Hospital)
95 (Radiumhemmet)
90 (State Institute, Buffalo, N. Y.)

Five Year Cures in advanced cases by combined radiation and surgery

48% (Huntington Hospital)

Five Year Cures in all cases

65% (Huntington Hospital)

CANCER OF THE LIP

Suggestive Symptoms

Any persistent scabbing area, ulcer, or hard nodule on the crimson margin of the lip.

Methods of Investigation

(a) If the diagnosis is not clear do not delay treatment for more than one week.
(b) The possibility of the lesion being a chancre or herpes should be borne in mind.

Five Year Cures in early favorable cases

By surgery 88 + (Massachusetts General Hospital)
By radiation 80% (Radiumhemmet)
Five Year Cures in cases suitable for operation 68 ±%.
Five Year Cures in all cases 60%.

CANCER OF THE BUCCAL MUCOSA
(Tongue and Mouth)

Suggestive Symptoms

A painless ulcer with indurated edges, or a small, hard tumor may be cancer; may be chronic inflammation, tuberculosis or syphilis.

Methods of Investigation

(a) Wassermann (does not rule out cancer, but in fact indicates predisposition).
(b) Biopsy: opinion varies, but in cancer hospitals biopsy with electrosurgical knife, of an ulcerating tumor, is held to be safe and to the advantage of the patient.
(c) Exploratory operation with immediate frozen section and with permission and facilities to complete the necessary operative procedure at one sitting is believed to be the safest plan.

Procedures to be Avoided

(a) Use of caustics.
(b) Delay for anti-syphilitic treatment.
(c) Incision through areas of leucoplakia.
(d) Incomplete excision by any method.
(e) Any material delay.
(f) Radical operations on advanced cases.

Five Year Cures in early favorable cases

By surgery 38% (Huntington Hospital and Massachusetts General Hospital)
By radium 8%-23% (Huntington Hospital and Massachusetts General Hospital)

Five Year Cures in all operable cases

By surgery 34% (Huntington Hospital and Massachusetts General Hospital)
By radium—as above

Five Year Cures in all cases

By surgery 5% (Huntington Hospital and Massachusetts General Hospital)

Note—It is generally admitted by surgeons and by radio-therapeutists that squamous cell cancer in lymph nodes is not permanently cured by penetrating radiation, and that surgical measures are necessary when extension to lymph nodes has already taken place.

CARCINOMA OF THE STOMACH

Suggestive Symptoms

(a) Increasing symptoms of indigestion particularly in individuals of the cancer age.
(b) Epigastric pain not relieved by food.
(c) At times there are no symptoms until the disease is well advanced.
(d) Vomiting and loss of weight are usually symptoms of advanced disease.

Methods of Investigation

A complete physical examination, including radiological examination by means of the barium meal.

Procedures to be Avoided

(a) Delay in making a complete examination in individuals complaining of gastric symptoms.
(b) External radiation as a method of treatment.

Five Year Cures in favorable cases

24% Massachusetts General Hospital (Mortality 38%)
20% Mayo Clinic (Mortality 10%)

Five Year Cures in cases suitable for radical operation; as above

Five Year Cures in all cases

4% Massachusetts General Hospital
5% Mayo Clinic

Note—In all cases which survived the radical operation but eventually died of disease 56% lived more than 3 years, while the length of life following palliative procedures was not over 8 months.

CANCER OF THE BREAST

Suggestive Symptoms

Any tumor of the breast, especially in women over 35, is suggestive of cancer until proved something else. Additional symptoms strongly suggestive of cancer are:

(a) Adherence to the skin, with atrophy of superficial fat and loss of mobility.
(b) Enlargement of axillary lymph nodes.
(c) Retraction of the nipple.
(d) Cancer is present in about 50% of cases of bloody discharge from the nipple; the remainder being papillary cyst-adenoma or cystic disease, both pre-cancerous conditions.

Methods of Investigation

Exploratory Operations in doubtful cases should be performed only when:

(a) Facilities are available to complete the radical operation if cancer is present, under one anesthesia.
(b) With the patient's consent to radical operation if cancer is present.
(c) With a competent pathologist present for frozen section diagnosis.

Procedures to be Avoided

(a) Excision of a suspicious tumor under novocaine or otherwise, with closure of the wound and a delay of one or two weeks while awaiting the pathological report. Operation for radical cure after this procedure is rarely successful.

Five Year Cures in early favorable cases

(with axillary glands proved on microscopic examination not to be involved)
By surgery—62% (Radical Operation)

Five Year Cures in all Operable Cases

By surgery—36% (Radical Operation)

Five Year Cures in All Cases—31% (untraced cases counted as deaths)

CANCER OF THE OVARY

Suggestive Symptoms

A woman married or unmarried, with or without children, between the ages of 20 and 70, complaining of low pelvic pain, swelling of the abdomen and abnormal bleeding. Some patients have weight loss and urinary symptoms. 22% have bleeding after the menopause. Many of the patients have ascites and palpable masses in the abdomen.

Methods of Investigation

Vaginal examination, rectal examination and careful palpation of the abdomen. If there is fluid in the abdomen outside the cyst, paracentesis can be done. Exploratory operation is necessary to make the diagnosis. Removal of the tumor and pathological examination are essential. Removal of as much of the tumor as possible is of great value and both ovaries and uterus should be removed if possible.

Procedures to be avoided

(a) Confusion with heart, kidney and liver disease.
(b) Avoid incomplete operation if removal is possible.
(c) Avoid tapping and rupture of cyst during removal.

Five Year Cures in early favorable cases

40% (Massachusetts General Hospital)

Five Year Cures in all operable cases

29% (Massachusetts General Hospital)

Five Year Cures in all cases

20% (Massachusetts General Hospital)

CANCER OF THE BODY OF THE UTERUS

Suggestive Symptoms

A woman, married or unmarried, with or without children, between the ages of 50 and 70, who after a normal menopause begins to bleed again and to have a watery discharge with occasional blood staining. Any change in the menstrual cycle.

Methods of Investigation

Immediate vaginal examination, inspection of the cervix and rectal examination. If no obvious cause for the bleeding is found, a diagnostic dilatation and curettage must be done at once and the specimen sent to the pathological laboratory for microscopic study.

Procedures to be avoided

(a) Attributing bleeding to menopause.
(b) A curettage without pathological examination.
(c) Supra-cervical hysterectomy.
(Total hysterectomy with removal of the cervix and both tubes and ovaries is essential.)

Five Year Cures in Early Favorable Cases

Surgery 88% (Massachusetts General Hospital)
Radium 60% (Heyman)

Five Year Cures in all Operable Cases

Surgery 76% (Massachusetts General Hospital)
No radium statistics available

Five Year Cures in All Cases

Surgery 72% (Massachusetts General Hospital)
Radium 43% (Heyman)

CANCER OF THE CERVIX OF THE UTERUS

Suggestive Symptoms

Usually a married woman who has had children, between the ages of 30 and 60. A

change in menstruation such as intermenstrual bleeding or bleeding at coitus. An increase or change in the type of leucorrhea.

Methods of Investigation

(a) Immediate vaginal examination with inspection of the cervix and rectal examination to determine the broadness of the cervix or infiltration into pericervical tissue.
(b) A biopsy and removal of specimen for microscopic study.

Procedures to be Avoided

(a) Failure to make a vaginal examination and assuring the patient that the discharge is probably due to the menopause.
(b) A supravaginal hysterectomy should not be done without proper investigation of the cervix.
(c) Avoid cauterization without biopsy.

Five Year Cures in Early Favorable Cases (Disease limited to cervix)

Surgery 48% (Massachusetts General Hospital)
Radium 75% (Massachusetts General Hospital)

Five Year Cures in All Operable Cases

Surgery 36% (Massachusetts General Hospital)
Radium 66% (Massachusetts General Hospital)

Five Year Cures in All Cases

Surgery 20-22% (Healey 1931)
Radium 20% (Memorial Hospital)

Note—31% of 111 consecutive cases entering the Massachusetts General Hospital treated by radium or operation were living without evidence of disease at the end of five years. These figures coincide closely with those reported from other clinics.

CANCER OF THE VULVA

Suggestive Symptoms

A woman, married or single, between the ages of 40 and 80, who complains of itching, burning or pain in the vulva; severe itching or burning after voiding, bleeding after scratching, or a pimple or lump in this region may have cancer of the vulva.

Methods of Investigation

(a) On inspection a white, glistening skin will be seen perhaps with leucoplakia (raised white areas).
(b) A small tumor, "pimple" or ulcer may be present.
(c) Excision of only a small specimen for pathological examination is safe, if followed by immediate operation.
(d) Total vulvectomy with dissection of one or both groins should be done.

Procedures to be Avoided

(a) Giving ointments to patients with itching, bleeding vulvas, or with small tumors.
(b) Local excision of the lesion.
(c) One-sided vulvectomy.
(d) Any incomplete operation.
(e) Radium or x-ray treatment except in the inoperable cases.

Five Year Cures in Early Cases

Radical Operation 63% (Taussig)
Radical Operation 30% (Massachusetts General Hospital)

Five Year Cures in All Cases

Radical Operation 20% (Taussig)
Radical Operation 10% (Massachusetts General Hospital)

BONE SARCOMA

Suggestive Symptoms

Pain and swelling at or near epiphyseal ends of long bones, in children and young adults, particularly persistent pain following slight injury.

Methods of Investigation

(a) X-ray examination
(b) If necessary, exploratory incision under a tourniquet and frozen section diagnosis. This should never be done except with permission for immediate amputation without removal of the tourniquet. Every such case should have a preliminary x-ray examination of chest for metastases.

Procedures to be avoided

Hasty incision and curettage under supposed diagnosis of osteomyelitis or benign tumor.

Five Year Cures

The Registry of Bone Sarcoma (American College of Surgeons) gives 10% five year "cures" of osteogenic sarcoma. Benign giant cell tumors of bone are not malignant, but a small percentage may become so. Ewing's Sarcoma is radiosensitive and, although subject to improvement under radiation, is almost uniformly fatal. The same can be said of plasma cell myeloma.

CANCER OF THE PENIS

Suggestive Symptoms

(a) Ulceration or a warty growth on the glans.
(b) Discharge from beneath the prepuce in adults with phimosis.

Methods of Investigation

(a) Exclusion of venereal disease
(b) Circumcision in cases of phimosis, permission having been previously obtained to proceed with the radical operation if carcinoma is demonstrated.
(c) Biopsy in certain selected cases.

Procedures to be Avoided

(a) Procrastination in instituting treatment.
(b) Radical operation if the lymphatic glands are extensively involved.

Five Year Cures in Early Favorable Cases

By removal of the glands in the groin and amputation 50%.

Five Year Cures in all Operable Cases—25%.

Five Year Cures in all cases—5%.

Note—The average duration of symptoms in the so-called favorable cases reporting to the clinic at the Massachusetts General Hospital was 10 months. Of the favorable but still operable cases 17 months. The majority of the cases of cancer of the penis are of low malignancy and form metastases relatively late in the course of the disease.

TERATOMA OF THE TESTICLE

Suggestive Symptoms

Painless, rather rapid increase in size of one testicle, usually associated with hydrocele.

Methods of Investigation

(a) Paracentesis to rule out hydrocele.
(b) Wassermann.

Procedures to be Avoided

(a) Delay in radical treatment if a hydrocele is demonstrated and the testicle found to be enlarged after withdrawal of the fluid.

Five Year Cures in Early Cases

By surgery and radiation 30% (Hinman)

Five Year Cures in Cases with Demonstrable Metastases—15%

Five Year Cures in All Cases—4%

Note—This is a rapidly growing tumor of young adults forming metastases in the retroperitoneal lymph glands early in the course of the disease.

CANCER OF RECTUM AND COLON

Suggestive Symptoms

(a) Rectal bleeding.
(b) Any change in bowel habits.
(c) Intestinal grippe.
(d) Colitis.
(e) Unexplained secondary anemia.

Methods of Investigation

(a) Careful examination of abdomen, pelvis and rectum.
(b) Proctoscopy.
(c) Barium enema only after rectal examination and proctoscopy have been done.
(d) Barium meal only after (a), (b), (c), as above are negative.
(e) Examination of stools for blood.

Procedures to be avoided

(a) X-ray studies before careful local examination.
(b) Diagnosis of hemorrhoids without excluding cancer as a cause for the bleeding.
(c) Local or incomplete excision.
(d) Colostomy (in inoperable cases) until specific symptoms are present which colostomy will relieve.
(e) Radium in good risk cases where radical operation offers favorable chance of cure.

Five Year Cures in early favorable cases

No satisfactory statistics

Five Year Cures in all operable cases

Rectum—55%
Colon—19%

Five Year Cures in all cases

Rectum—23%
Colon—10%

WHAT CAN THE SURGEON EXPECT IN THE WAY OF GUIDANCE IN THE TREATMENT OF CANCER FROM THE PATHOLOGIST?*

BY S. BURT WOLBACH, M.D.†

IN giving me this title to discuss before an assembly of surgeons we may suspect that Dr. Bigelow wants to start "something". If he does he should have assigned it to a surgeon (who better knows the answer) paraphrased as "Of what use is the Pathologist anyway?" Knowing, however, that surgeons are more liable to get out of hand and that pathologists are well broken, perhaps he was wise and I shall try to go through my paces, in doubt as to whether you will call my remarks "some confessions of a pathologist" or "an indictment of surgeons". Some surgeons may deserve indictment for daring to do tumor surgery, many surgeons should be convicted for their attitude toward pathologists and this is why I believe that there are so few practitioners of pathology who are competent enough to meet operating room exigencies. There are only a few pathologists in each medical center who are able enough to be of occasional use in actually guiding or determining the manner of treatment. The rank and file of pathologists scattered throughout the country are probably meagerly equipped to give belated diagnoses on tissues. In the long run correct diagnoses, even if belated, do help

*Read at the Cured Cancer Clinic Meeting held in Boston April 6, 1932.

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educate the surgeon and indirectly eventually guide his treatment. The direct reply to my subject could be made in a few words. I take advantage of this opportunity to mention frankly some other aspects of the relationship of surgeon and pathologist because, if the surgeon needs education in pathology, he also needs to be educated concerning the pathologist.

The pathologist like the surgeon, to be of any use, must be an able person—alert, learned and experienced. The worst that can happen to a tumor patient is to strike an incompetent or inexperienced surgeon guided by an incompetent pathologist, while the height of incompetency in a pathologist is inability to say "I don't know" on proper occasions.

It's senseless to try to live up to what many surgeons still believe: that the process of cutting and staining sections develops a diagnostic image that requires only a microscope to read; whereas an intensifier is always needed composed of clinical knowledge, pathological experience and ordinary common sense.

Professor Prudden in the first pathological department in this country had a sign posted to the effect that no reports would be made upon any material unless it was accompanied by a full clinical account. If the pathologist is going to be of therapeutic as well as of diagnostic efficiency he must be prepared to give an immediate ("rush diagnosis") diagnosis during the operation or within a few minutes after a piece of the tumor is submitted to him. This means that he should know beforehand all about the clinical aspects of the case and have studied the x-ray plates; that he should know as much about the external signs as the surgeon, that he should be better than the surgeon in interpreting gross evidences in excised material, that from a frozen section he should be able to recognize and name the tumor, grade its growth rate, estimate the value of radical excision, and know whether it is amenable to treatment by radiation. I am a little in doubt about the propriety of the pathologist's making therapeutic suggestions to surgeons, but I have been asked so frequently that I assume it may be one of his jobs, *and know that circumstances may make it a duty.*

The surgeon should know what to expect of the pathologist and not to expect too much on occasions which are all too frequent (Ewings and Mallorys are few). There is quite a debit account that the pathologist must wipe off, errors due in part to trying to predict behaviors of tumors on microscopic criteria alone (for example, the needless amputation for giant cell tumors of bone) once regarded as sarcomas, because of the usual abundance of mitoses—and before Sampson's work (a fine example of what a surgeon pathologist can do) calling endometrial implants, adenocarcinoma. In fact, in the series of slides submitted in verification of cures of cancer for this occasion one of the uteri was that of diffuse endometriosis.

Many needless extensive dissections have been done for benign mammary gland conditions because of misleading microscopic diagnoses. Malignant cartilage tumors in adults are still too frequently called benign. It's wrong to think that the microscope has been the important source of our knowledge of tumor behaviors. After all we have culled a few data of use in new territories, but most often in looking through the microscope we look for familiar faces; by their recognition we predict behavior based upon previous observations. A new face under the microscope perplexes the most experienced of pathologists and then he must take recourse in the search for a recognition of criteria common to all tumors and often his opinion rests upon a careful balancing of details. When such an opinion is rendered it must be done without pride and the surgeon should be informed whether the pathologist stands upon the firm ground of experience with that particular tumor or lesion. The tumors of early life present quite special problems as few of the criteria used with adult tumors are of value. In no other field of work is it so essential for the pathologist to correlate behavior with histology, irrespective of such things as mitoses, capsules and apparent invasion.

Other debit entries are those due to failure of the pathologist to remember that what he receives from the surgeon may not be representative of the lesion. Here the blame in part rests upon the surgeon. I have in mind some extraordinary reports of pathologists of the first rank, who by gross evidence at the operating table or from submitted photographs named tumors from inflammatory or reparative reactions in adjacent tissues. Interesting things happen in soft parts after pathological fractures of bones and hence the diagnosis by one professor of pathology of malignant hemangioma, by another by myogenic sarcoma.

What I have just said implies that the pathologist must get much of his training from surgeons and their case records in institutions where patients are followed for sufficiently long periods after discharge. As a whole pathologists concern themselves too little over the end results of tumor cases. It is difficult and often impossible to do otherwise except for those serving many years in first-class hospitals in close daily contact with clinical staffs and subject to their keen and usually friendly criticism. Much of my education in practical lines has been received at the lunch tables of the Montreal General and Peter Bent Brigham Hospitals.

Working as a team, a good surgeon and a good pathologist give the patient the maximum number of favorable "breaks". The pathologist should not only watch the surgeon, but should not hesitate to offer advice and should

insist on getting the right material when a rapid microscopic diagnosis is called for. The surgeon should call only those pathologists for whom his respect is such that these things are tolerable. The more the surgeon knows about pathology the less he needs a pathologist, but the greater is his intelligent use when he does.

Mastery of surgical technic is more easily acquired than knowledge of possibilities and judgment. These come only with years of intelligent practice. The severest indictment I have to make of surgeons is that implied by the fact that an industrious and intelligent young man can, after three years in a busy hospital pathology department, render more accurate gross diagnoses of exposed lesions than most surgeons of four or five times three years in practice. This brings me to two favorite themes of mine. (1) That every surgeon should so far as possible, be his own pathologist and (2) that surgical hospitals should recognize that to achieve high competency in the practice of pathology is as difficult as in any specialty and that rewards in salary and position should be so rated. The pathologist should not be employed with the belief that the microscope is a divining rod. If a surgeon who, as a rule, seems to have time for numerous hobbies and avocations would spend a few moments pondering over each lesion excised and again later in its microscopic study, he would soon acquire a knowledge that would make him largely independent of pathologists and a considerably better surgeon. Perhaps the assisting and encouraging of surgeons in this pursuit is the most important contribution that pathologists can make—by way of answer to Dr. Bigelow. Our best surgeons interested in tumor surgery, are all good pathologists. I have only to mention Cushing, Bloodgood, Greenough, Graves, and Simmons. Our best pathologists are good surgeons in everything but operating technic, and the after-care of patients.

As I have already indicated, the pathologist cannot acquire the necessary competence wholly within the laboratory. If he is needed, his proper place is in the operating room, previously prepared by knowing all information gained by clinical and x-ray studies. He must be trained in seeing and reading changes in organs through which blood is coursing because there are many differences between the appearance of living organs in the body and dead organs upon the laboratory bench.

A pathology laboratory, properly run, naturally becomes a clearing house in which there is much balancing of information from clinical and laboratory sources. The pathologist must learn the end result of each patient from whom he has received material which he could not satisfactorily classify as to diagnosis and prognosis. Hence the pathologist learns things about tumors that most surgeons have not opportunity for; and should therefore be able to give aid in the recognition and prognosis of rare tumors and also the commoner tumors of borderline malignancy.

We need a few more Codmans to organize and manage tumor registries patterned after the celebrated bone tumor registry. I know I learned more about bone tumors from that source than from all the other opportunities I have had. I realize that similar attempts are in progress but the driving force and devotion of a surgically-minded crusader are lacking.

I have by this time given you some idea of what the relationship of the pathologist and surgeon should be. I must repeat that competent pathologists are rare and that I believe every hospital in which surgery is practised should have one. What I call long-distance pathology, the practice of sending surgical specimens to a distant laboratory for description and diagnosis, is a very poor substitute for a genuine pathological service, although it does enable the hospital to get a certain rating in national organizations. I wonder how many surgeons even bother to read the belated reports, particularly if the patient is doing well or already sent home. Some educational purpose is achieved, I suppose.

In a very few words I can answer Dr. Bigelow.

(1) A pathologist can be of great assistance in the early diagnosis of tumors because he learns at an earlier age than the surgeon to recognize through sight and touch, evidence of malignancy long before textbook descriptions are duplicated. (With tumors of brain, bones, lungs and gastro-intestinal tract, the roentgenologist takes first place in the function of diagnosis.)

(2) He should be able to name a tumor in the operating room within a few moments after a biopsy.

(3) Give an idea of its growth rate or degree of malignancy.

(4) Know the probable degree of sensitivity to x-rays and radium.

(5) Demand sufficiently wide excisions of malignant tumors. Here lack of knowledge of possibilities, particularly of lymphatic permeation is too often apparent in the surgeon. The mistake of taking too little margin is many times more common than that of taking too much.

However, the real answer is a long-term affair. The real opportunity for service is in the education of surgeons which can be accomplished only by bringing surgeons into contact with well-trained pathologists. This can never be done until long-distance pathology is abolished, and every hospital has its own competent and contented pathologist. One has only to be familiar with a heavy routine of long-distance

pathology to grow vehement on the subject of how little pathology many surgeons know.

A candidate for a surgical appointment deprecated his year in pathology with Mallory, saying that he knew nowadays surgeons preferred men trained in physiology.

But where are the properly qualified pathologists coming from? Hospitals will not appoint more men than are necessary for the volume of routine and hence but few get the opportunity to learn. By being able to place men in these hospitals so that a three-year course can be arranged, the Department of Pathology is able to produce an average of less than one adequately trained pathologist a year. The rate of output at other institutions is probably not greater. More men would study pathology if more interneships or fellowships could be provided. This I know from many experiences. Certainly a move toward providing more and better pathologists for tumor work should be incorporated in the program of Cancer Control.

SUMMARY OF CURED CANCER CLINICS*

BY WILLIAM P. GRAVES, M.D.†

THE purpose of this résumé is to summarize briefly the outstanding achievements of medical science in its great war against the scourge of cancer. Those workers who in the laboratory or clinic have been actively engaged in the conflict, regard the advances of the last three decades as momentous and share an almost universal spirit of optimism as to the final result. Among the laity and many of the profession, on the other hand, there is a prevailing conviction often expressed that the whole movement has up to the present time been more or less of a failure.

This conference is an attempt to correct if possible the general feeling of discouragement by demonstrations of authentic cures of cancer and by a presentation of the latest scientific and practical knowledge relating to the disease. First of all, to those who are impatient of results, the extreme difficulty of the general problem must be clearly stated. It is not a question of tracking to its lair and there overpowering some hostile organism that preys on living tissues. The enemy represents no less an antagonist than a derangement of the life principle itself, for the cancer cell has all the inherited attributes of the normal, plus or minus an unknown quantity that in its last analysis is undoubtedly of a physicochemical nature. The phenomenon of the growth-energy of cancer is therefore inextricably linked with that property of matter that we call life, and the explanation of one secret will necessarily throw light on the other and require a long time for its solution. The prodigious advances of the last thirty years in the knowledge and control of the forces of inorganic matter already foreshadow a similar command of living forces. So we must recognize that the first and most fundamental steps toward our goal have been the twentieth-century achievements in natural science with which the special sciences of life, death, and disease are rapidly becoming correlated. If to anyone the realm of natural science seems unrelated to the solution of the cancer problem, let him recall that it was precisely through this channel that the selective action of radio-active matter on cancer cells was discovered. This we may perhaps regard as the greatest cancer triumph of the century.

Material advance in the theoretical science of cancer dates from the opening of the twentieth century, when it was put on an experimental basis by the discoveries of Jenson and Loeb that cancer in animals can be transplanted and made to grow like the original tumor. Previous to this time scientific knowledge of cancer was limited to the morphological identification and classification of the cancer cell, and to futile attempts to trace its cause to a specific bacterium or parasite. Theories of causation were rampant and included the familiar claims as to soil, climate, specific foods and so on, all of them unsubstantiated speculations.

The second great advance was the discovery in 1914 by two Japanese investigators that cancer can be artificially induced in animals by the constant irritation of certain chemical substances, notably tar.

The third important advance, was the demonstration that cancer in laboratory animals is an inherited factor, following definite genetic laws.

The fourth advance was the revelation by Warburg of certain chemical differences in cell metabolism between normal and cancer tissue, a discovery for which Warburg was awarded the Nobel Prize.

These are the four starting points of most modern cancer research. I shall now point out some of the more significant conclusions to which scientific studies have led.

1. *Transplantation.* Conclusions from the study of transplanted cancers are necessarily limited since the animal is only a host for the engrafted tumor, and reacts somewhat differently to it than to a spontaneous cancer of its own. But valuable lessons have been gleaned from these cancers, two of which I shall mention. First, the biological identity of cancerous and normal cells has been established, since both follow the same

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laws for grafting, and both, when grown in vitro, exhibit the same behavior excepting that the cancer cell has a superior growth-energy by virtue of which it surpasses and finally overwhelms the normal cells.

Secondly, it has been shown by Loeb that transplanted cancer-cells stimulate to cancerous growth the neighboring normal cells of the host with which they are in contact. Here apparently is a discovery of the first magnitude that opens up a wide field of research. It suggests that cancer spreads not only by the propagation of its own cells, but also by the elaboration of a growth-inciting agent which has the power of inducing cancerous transformation in contiguous normal cells. This substance is possibly analogous to the filterable virus of the well-known chicken sarcoma of Rous, which, entirely devoid of cells, reproduces the original tumor when injected into a normal fowl.

This particular phase of scientific research, it must be stated, is by no means completed, and is at present little understood. It is mentioned here on account of the important rôle that it promises to play in the final solution of the problem.

Artificial Cancer. The discovery that cancer can be produced in laboratory animals by certain chemical and physical agents has revealed many valuable facts. Primarily it has established the law that irritation is a competent and frequent excitant to cancer and has led to a rational prophylaxis that can be effectively carried out in certain accessible locations where cancer is prone to develop.

The irritation theory appealed at once to the popular imagination so much so that it is now a general belief that all cancers are the result of abnormal irritation, a view, that must be somewhat modified in the light of modern knowledge of heredity.

Artificial cancer in laboratory animals provides an invaluable means of research in the problems of human cancer, since it has been proved beyond all possibility of doubt that human and animal cancer are biologically identical. Hence no proposed cancer remedy is nowadays seriously considered unless it has first stood the tests of animal experimentation. Finally in conjunction with studies in heredity it has been shown that under the same conditions of irritation there is a difference of susceptibility to cancer-excitation in species, races, family strains, and individual organs. The difference ranges from an almost complete resistance to irritation, to a susceptibility so sensitive that the resulting cancer may almost be regarded as spontaneous.

Heredity. The doctrine that cancer is a definite, heritable factor has been accepted with natural reluctance, but its validity has been proved by thousands of experiments on animals extended over many animal generations. Since the biological laws that obtain in animals are shared by man it seems inevitable that human cancer must be a heritable trait. This most important phase of the cancer problem is also the most difficult, for man from the standpoint of heredity is far the most complex of all living creatures, and the estimation of special hereditary factors, simple enough in lower organisms, is in him beyond the present power of mathematical computation.

However, the knowledge that cancer is an hereditary disease is proving useful in many ways. It has explained away the fallacy of many old theories of the causation of cancer, and is definitely pointing new directions for scientific research. As new genealogical data are acquired it may eventually be of practical importance in the field of human eugenics in its special relation to cancer.

It is necessary to understand clearly what the expression cancer-inheritance means. It does not imply an inheritance of the actual disease, but rather the susceptibility to it. It also includes the opposite factor of resistance. Hence though the idea of cancer inheritance is at first repellent, it is nevertheless comforting to know that the resistance factor is for the most part dominant, so that in general one is far more likely to inherit a comparative immunity rather than a susceptibility to the disease.

The two known exciting causes of cancer are then, 1, stimulation by irritation, and 2, hereditary susceptibility. This is graphically expressed by Loeb's well-known equation $C = H \times S$: cancer is the product of heredity by stimulation, the product being the same, though the two factors may vary widely in proportion.

Chemistry of the Cancer Cell. The discoveries relating to the chemistry of cancer are too technical to detail in this short summary. Suffice it to say that chemistry will probably be the medium by which the mystery of cancer-growth will finally be solved.

So much then for the purely scientific aspects of the Cancer Campaign. I shall now review certain lines of investigation of a more generally practical nature.

Statistics. Statistical research is adding much to the knowledge of cancer, two items of which require special mention, i.e., the incidence of cancer in animals and savages, and the question of whether human cancer is on the increase.

Cancer is being found in nearly every living species including mammals, birds, fishes, lizards, and even insects. This does not mean that cancer is spreading rapidly among animals but simply that it is being looked for there and widely disclosed for the first time. It suggests, rather, that cancer is a universal phenomenon of life and that it may have existed as such since life began.

The study of spontaneous cancer in animals and primitive races of man has done much to ex-

plode the old, though still prevalent, theory that cancer is exclusively a human disease, and a product of modern civilization.

One of the most important problems that statisticians are seeking to solve is the question as to whether human cancer is on the increase. Much of the discouragement with regard to the final outcome of the conflict has been due to the common belief engendered by statistical figures that the disease is rapidly spreading. The question has not yet been settled, but the general evidence tends more and more to refute this idea and to prove that the apparent increase in the disease is due to improved methods of diagnosis by which more cases are discovered, and to the greater longevity of the human race by which more people attain the cancer age.

Treatment. The frequent failure of cancer-remedies, to which wide publicity is always given, has created a popular impression that all cancer treatment is a failure. When a patient dies of cancer everyone knows it, when a patient is cured of cancer, few know it and none like to admit it. The layman therefore, hearing of many deaths and no cures, is naturally apt to conclude that cancer is incurable.

The assembling of this conference has been a deliberate attempt to advertise authentic cures of cancer, and to show not only that these cures are many, but that the number of cures is undergoing an encouraging increase each year as the five- and ten-year postoperative periods come around.

Surgery and radium, used separately or in conjunction to suit the individual case, are the sovereign remedial agents. Surgery has perhaps reached its limitations, but has by no means lost its importance. The possibilities of radiation are far from being exhausted. Radium kills cancer swiftly but varies somewhat with the type of growth. Failures are due to improper or inadequate application, inaccessibility of the growth, or extension of the disease beyond the range of fire. In other words the difficulties are largely technical, though they are often insuperable.

Education. The immense educational cancer propaganda that is being carried out all over the world, of which this conference is an example, has as its one outstanding object the teaching of the importance of early treatment in cancer. Already much has been accomplished. People with curable cancers are appearing for treatment in greater and greater numbers, either on their own initiative, or at the urge of their physicians, and this opportunity for earlier treatment accounts largely for the notable increase in the number of permanent cures.

At the present time we are for the most part dependent on recognition of the first sign, or symptom, and immediate investigation by the usual means of diagnosis. If this policy were universally carried out the mortality of cancer would be enormously reduced. But there would still remain the large number of cases in which symptoms do not appear until after the growth has passed the possibility of cure.

It is therefore desirable, if possible, to get back of the symptomatology and to search for the clinically latent process. This is already possible to some extent in certain locations of the body such as the skin, the oral cavity and the female genitalia. In these accessible areas there frequently occur certain lesions usually of an inflammatory nature with a cancer-potential, the surgical treatment of which offers an excellent prophylaxis against future malignant disease.

There is at present no royal road to the detection of early latent cancer. In its first stages, cancer is apparently a local and not a general constitutional disease, and cannot be discovered by any known serological or general test. In only exceptional cases can the hereditary element be determined.

All depends therefore on a keen recognition of the suspicious case and prompt recourse to biopsy or other means of diagnosis. It must always be borne in mind that a cancer that gives signs is, from a biological standpoint, already advanced, though not necessarily incurable. The policy therefore of waiting in a suspicious case "to see if cancer develops" is only too frequently fatal to the patient, and always an inexcusable form of advice on the part of the attending physician.

THE IMPORTANCE OF THE INFORMED PUBLIC OPINION*

BY JOHN FINLEY, A.M.†

IF I could have had a part in determining what books should be regarded as canonical, I should have voted for the inclusion of the Book known as "Ecclesiasticus" or as "The Wisdom of the Son of Sirach." At any rate I follow the example of St. Augustine in making frequent use of it and I would imitate St. Jerome in urging that it be read for the "instruction of the people" even if it may not be followed as an authority in theological dogma. It contains among many essays of wisdom about things physical and things spiritual, a remarkable essay—a very brief, sententious one—on Disease and the Doctor, none better for such an occasion as this has, so far as I know, been written in all the ages since it was translated by

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a person in Egypt in 132 B.C., though it is the sort of essay that Sir Thomas Browne or Sir William Osler might have written.

The first part has to do with health habits:

> My son, prove thy soul in thy life, and see what is evil for it, and give not that unto it. For all things are not profitable for all men, neither hath every soul pleasure in every thing. Be not insatiable in any luxury, and be not greedy on the things that thou eatest. For in multitude of meats there shall be disease, and surfeiting shall come nigh unto colic. Because of surfeiting many have perished; but he that taketh heed shall prolong his life.

The second part turns toward the doctor, to whom all must come or soon or late, whatever their health habits:

> Honour a physician according to thy need of him with the honours due unto him; for verily the Lord hath created him. For from the Most High cometh healing; and from the king he shall receive a gift. The skill of the physician shall lift up his head; and in the sight of great men he shall be admired. The Lord created medicines out of the earth; and a prudent man will have no disgust at them. Was not water made sweet with wood, that the virtue thereof might be known? And he gave men skill, that they might be glorified in his marvellous works. With them doth he heal a man, and taketh away his pain. With these will the apothecary make a confection; and his works shall not be brought to an end; and from him is peace upon the face of the earth.

The third part gives advice to the patient:

> My son, in thy sickness be not negligent; but pray unto the Lord, and he shall heal thee. Put away wrong doing, and order thine hands aright, and cleanse thy heart from all manner of sin. . . . Then *give place to the physician*, for verily the Lord hath created him; and let him not go from thee, for thou hast need of him. There is a time when in their very hands is the issue for good. For they also shall beseech the Lord, that he may prosper them in giving relief and in healing for the maintenance of life. He that sinneth before his Maker, let him fall into the hands of the physician.

These three portions of ancient wisdom have suggested the three parts of my brief application to modern conditions.

I

The first is the forming of health habits: "He that taketh heed shall prolong life." This is the affirmative as contrasted with the prohibitive way of promoting health: by assisting children in forming habits of health from which it will be difficult to depart as the years go on. What is being done by the States through the schools in giving instruction in the habits that lead to the full health of the body and so of the spirit that is its guest, is the most promising advance that has been made since man began to dwell in cities, where, as Sir Arthur Keith says, modern civilization began.

In Governor Roosevelt's Foreword for the Report of the unofficial Health Commission which is released for publication tomorrow morning, the following paragraph appears:

> Efficient health services in all the schools, presupposing the essentials of care for the younger child, would come close to insuring for the children of this generation normal development, free from preventable disease or other unnecessary physical handicap. Add to this a program of sound health teaching which would make personal hygiene habitual, and a heavy burden of economic and social loss would be lifted from the State. No conservation program is of more significance to the State than the conservation of its children.

The Children's Charter, adopted by the White House Conference on Child Health and Protection, is the most advanced body of guarantees ever promised to children of this earth by the generation ahead of it. One of its pledges reads:

> For every child health protection from birth to adolescence, including: periodical health examination and, where needed, care of specialists and hospital treatment; regular dental examination and care of teeth; protective and preventive measures against communicable diseases; the insuring of pure food, pure milk and pure water.

A few weeks ago I attended a meeting in New York celebrating the splendid work of the New York Health Commission and hearing that the expectancy of life had been lengthened 14 years I was reminded of the Scriptural story of a certain king, King Hezekiah,—to whom it was intimated that he was about to die. He turned his face to the wall and sent up a prayer to the only Health Commissioner of that day, the Lord Himself, who sent a young prophet to tell him that he would live fourteen or fifteen years more. And King Hezekiah said, "How shall I know that my life will be spared yet fifteen years?" The young prophet said to him, "Does the shadow go back on the dial, or go forward?" The King said, "It is not a light thing that the shadow should go backward on the dial." But the shadow went back on the dial nevertheless and King Hezekiah lived for fifteen years and redeemed his city. So while the maximum span of life has not been lengthened, the average has been, and in that lengthening more suffer from degenerative diseases, chief among which is that to whose study and control you are devoted.

II

The second is "Honor the physician." The scientist who has in his researches discovered the germ or other sources of many diseases which were once pestilences that walked in darkness or the destruction that wasted at noonday, is being universally honored. The world has come to recognize his services, but there is no injunction of the ancient wisdom that I am more glad to follow than that which urges the honoring of the

physician who in thousands upon thousands of communities is carrying the gifts of science to the people.

I have long had it in memory that Homer in his Iliad began the praise of doctors in praising Machaon immortally. Achilles said, "A doctor is to be preferred with physic ornaments before a multitude,"—or, as another translator has put it more simply,—"He's worth a host of us."

I envy the doctor of medicine, the real doctor, the doctor whom the Lord hath created, for he has the satisfaction of knowing that he has saved or prolonged life while we who have to do with ideas (only or largely) never can know certainly whether we have helped or harmed. I keep in my vivid memory a scene in the narrow hill-side streets of Nazareth during the War, just after its deliverance, when the women and children gathered around my companion, the British medical officer, a Scotsman, who had for years before been the physician in Christ's Home Town (as a Denver paper called it) kissing his hand that had healed them and crying many of them for joy.

III

But the third counsel relates to the importance of an informed public opinion—one that will make the advice of physician and the scientist practical by coöperating with them. There is another translation of Ben Sirach's which reads, "Acquaint thyself with a physician before thou have need of him," to which is added, "In sickness be not negligent." The greatest difficulty those who are fighting diphtheria, for example, have is that of getting parents to bring their children to the clinics for immunization, even though it can be assured them without expense. It is even more difficult to get such coöperation where the assurance of relief or protection cannot be so definite.

Vernon Kellogg once said in a letter to me that there were 14 discoveries in the field of biology that would be of great benefit to mankind if only they could be got into the consciousness of the public. This it is one of the functions of the newspapers to help accomplish. If only they could know always what to say. Charles A. Dana once said that a journalist must know whether the theology of the parson is sound, whether the law of the lawyers is good law and whether the physiology of the doctor is genuine. That is perhaps not always possible, but it is possible to have such bodies as this advise the public through the newspaper whether this or that theory or practice is sound, in medicine and public health. Certainly the journalist is as eager to know the truth and to tell it as any research professor can be, and he usually knows better how to tell it.

I was reading yesterday an Arab newspaper from Palestine which told of their fighting the mice that were ravaging the wheat fields and I at once recalled how the Philistines, devastated by the deadly plague of tumors which they assumed the mice had somehow brought, fashioned five golden mice and five images of tumors as a guilt offering to the Israelites. What is needed now is not the golden symbols of the pest, but the golden endowments wherewith the researches may be continued for the extermination of the disease which stands first when deaths due to a single cause are considered.

I bring you a copy of the report of the unofficial New York State Health Commission to be made public in tomorrow's papers containing these specific recommendations:

> That the State and local departments of health promote the establishment of more adequate facilities for the diagnosis and treatment of cancer, including hospital care and diagnostic tumor clinics with properly qualified physicians in charge and an adequate follow-up service.
>
> That qualifications for pathologists engaged in tumor diagnosis be prescribed by the Public Health Council.
>
> That the State Department of Health continue and extend its efforts to educate the public regarding cancer and that voluntary associations carry out a more aggressive, educational campaign in this field.
>
> That sufficient appropriations be made to continue and expand the research work now in progress at the State Institute for the Study of Malignant Diseases—which received an appropriation of more than $250,000 from the State in 1931 and was enabled in 1929 to purchase $300,000 worth of radium—the amount being the largest available supply in any institution.

Especial attention is called in this report to your splendid work in this State. But it is carrying owls to Athens, as the Greeks used to say (coals to Newcastle, trees to Norway), to speak further of what you and others are doing to push back the shadow on the dial for those threatened by this dread disease.

I make as my epilogue an old Greek hymn to health which I have somewhat modernized and democratized for this occasion:

O holiest Health, all other good excelling,
May I be ever blest
With thy kind favour, and for all the rest
Of life, I pray thee ne'er desert my dwelling:
For if God shall riches give,
Or a name that long shall live,
Or children smiling round the board
With a mother who's adored,
Or any other joys
Which the all-bounteous One employs
To raise the hearts of men
Consoling them for long laborious pain;
All their chief brightness owe, kind Health, to you;
You are the Graces' spring;
To you all blessings cling;
For no man's blest when you are not in view.

WORKMEN'S COMPENSATION LEGISLATION OF THE UNITED STATES WITH SPECIAL REFERENCE TO THE MEDICAL ASPECTS

BY LINDLEY D. CLARK, A.M.*

THE underlying principle of workmen's compensation legislation, briefly stated, is that the employer is charged by law with a similar responsibility for maintenance and repair of the human element in his establishment to that which he has for the mechanical equipment. Instead of seeking defenses against liability only when negligent, society devolves on him the responsibility for remedial treatment for the injured employee, and a measure of support for the injured and his dependents in the meantime, with provision also for fatal injuries.

Obviously there is large interest for the legal profession in the change from court to commission, and still more for that of medicine, since every injury except the very trivial is to come under the care of a physician. As compensation laws have been adopted in nearly all of the states, their general aspects are of equally general interest to employers, workmen, insurance carriers and the public at large. Indeed, at least one state has for a number of years taught the principles of its statute in the public schools.

This study proposes to review briefly the provisions of this class of legislation, with special consideration of the medical aspects.

DEVELOPMENT OF THE LAWS

The first state law of approved validity and general application providing for the compensation of workmen for injuries was enacted in 1911, ten states so acting that year after several years of study. Now all but four states have laws of this type, besides Federal statutes covering civil employees of the United States and the District of Columbia, longshoremen and harbor workers, and private workers in the District of Columbia. The laws varied by reason of differences in state constitutions, in industrial development, the effectiveness of labor and employer associations, etc., but there is evidence of harmonizing tendencies which have leveled up the less liberal statutes in a variety of ways, some of which will be noted under the different headings which follow.

PRINCIPAL FEATURES

Administration.—All but six of the compensation acts in the United States are administered by boards, commissions or individual commissioners. In the others the law is administered by the courts, and the employment of an attorney by claimants would be a normal incident. In commission states, legal services are largely dispensed with, some commissions actively discouraging their employment as a needless expense, a few encouraging it, others being neutral. Attorney fees are usually subject to approval by the commission.

Appeals from awards or rulings may be taken to the courts in all states but one, but usually only on questions of law.

Coverage.—Some laws cover only "hazardous" or "extra-hazardous" employments, nearly all excluding domestic and farm labor and casual employees. In about one-half the states employers of less than a specified number of employees are exempt, the number usually ranging from two or three to nine or ten. Inclusions have increased by amendment in many states, notably by the inclusion of public employees who were largely excluded by the early laws.

Injuries compensated. — Injuries must as a rule arise out of and in the course of employment to be compensable, though in some laws it is only required that the injury be received in the course of the employment, or be sustained in the performance of duty. In a large majority of the acts the idea of accident is expressed, or of violence to the physical structure; while in others the language permits the inclusion of any physical disability occasioned by the nature and conditions of the employment, thus bringing so-called occupational diseases within the scope of the law. Such diseases are being increasingly recognized as properly compensable, either by language of general import, or by the inclusion of lists of diseases to be so regarded. Infections and diseases resulting from accidental injury are compensable under all laws.

A waiting-time or period of uncompensated disability is provided in all but two states, ranging from three days to two weeks, one week being the most common period. In a majority of the laws the waiting-time is to be compensated for, if the period of disability exceeds a specified term. Medical treatment must be provided, if needed, whether compensation becomes payable or not.

Disability may be temporary or permanent as to duration and total or partial as to quality. A schedule of awards for maimings or mutilations, classed as permanent partial disabilities, is to be found in nearly every law, though the idea of fixed benefits met with considerable opposition for a time. Serious and permanent dis-

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figurement is also provided for in several statutes.

Schedules vary widely in their terms. About one-half pay separately for prior total disability or healing time while others include this in the term specified. The laws also lack uniformity in the definition of amputations. Some ten or twelve laws give consideration to the value of the remaining stump, a position which commands approval when compared, for instance, with laws which fix the ankle as a boundary between liabilities, since amputation at the ankle leaves a less useful bearing for an artificial member than would amputation at a point above.

Hernias are the subject of special consideration in many laws, occurrences, symptoms and tests to guide the commissions in their investigations being set forth in detail. Definite accident, immediate pain and complaint, and time of development are usually named, though medical advisers differ widely as to the usefulness of some of these tests. Operative treatment is prescribed in several laws, with the exception of cases involving unusual danger.

Cash benefits.—Compensation payments are usually made weekly and are a fixed percentage of the earnings, ranging from fifty per cent of the wage in thirteen states (modified in some by the number of dependents) to 66-2/3 per cent in thirteen other states and under the Federal statutes. (70 per cent in one state.) Weekly maximum amounts payable range from $14.00 in two states to $25.00 in one state and the District of Columbia and for longshoremen and harbor workers.

The term of payment for death is limited to 260 weeks in one state, 285 in another and 300 in several, the maximum being 500 weeks, but with a maximum total payment of $6,400.00. Other laws pay until the death or remarriage of the widow, but in three of these the total may not exceed $7,500.00. The lowest fixed total is $3,000.00. Funeral expenses are allowed in most jurisdictions, the most common sum being $150.00.

Insurance securing payments is required in every state but one, state funds existing in seventeen states, while self-insurance under prescribed conditions is commonly allowed.

Medical services.—Every compensation act contains provisions for "reasonable", or "necessary" medical treatment. In eight states and under the Federal acts there is no limit as to either time or cost of such treatment, while other laws limit one or both. The period of treatment required is as low as two weeks in three states (subject to extension in one of these by order of the commission), and is fixed at four weeks or thirty days in eight (subject to extension in five); while the maximum expenditure allowed is $100.00 in eleven states, subject to increase in eight. There are but eight states in which the limits named are absolute.

Though injuries to the teeth are not ordinarily industrially disabling, dental work is quite generally regarded as a proper part of the treatment of the results of injury, where appropriate, and a few laws contain specific provisions with reference thereto.

The supplying of artificial members is variously dealt with under different laws and under the policies adopted in the states where the law is not specific. There is a tendency toward providing such appliances even though not specifically required by law.

The employer must furnish the physician in most states, but in four or five the employee may choose his own at the employer's expense. Provisions for emergency attendance and for a change of physicians in cases of unsatisfactory conditions are generally found, while in a few cases the employee may choose his own physician where a major operation is involved. In one state the employer must maintain a panel from which the employee may make his selection. Refusal to accept treatment or to obey instructions, or persistence in injurious or insanitary practices generally suspends and may forfeit payments of benefits. It is commonly provided that employers shall not be responsible for malpractice on the part of physicians, but only for any resultant disability.

The medical charges are frequently directed to be at a rate appropriate to persons of a like standard of living in the same community, and are as a rule subject to regulation or approval by the state board or commission. Several states have an established fee schedule by action of the boards. According to a number of laws, hospitals and groups of physicians may contract to provide service, their equipment, etc., being subject to inspection. The provisions as to fees do not affect agreements entered into between employers and physicians or hospitals.

As a rule, only practitioners recognized by state laws can collect fees under the compensation acts, and osteopaths, herb doctors, masseurs and mechanotherapists have been held outside the requirements by various boards and commissions. Christian Science practitioners may render service in one state unless the employer files written notice to the contrary.

Employees claiming or receiving compensation must submit to examinations ordered by the administrative agency or reasonably requested by the employer; and refusal will as a rule suspend benefits during its continuance. The claimant may have his own physician present when he appears at the request of the employer; some laws contain this provision where the examination is ordered by the board.

The medical profession is drawn into industrial accident work in three ways. In the first

place, physicians are employed as medical advisers or directors by about one-third of the state commissions and are designated to conduct examinations and make reports in the other states. Secondly, they are employed by insurance adjusters or by employers who maintain first aid stations and the value and importance of these services are growing. Finally, there is a large body of practicing physicians, some of them in private group clinics, who are specializing in industrial accident cases. All three groups constantly face the baffling problems of neuroses, sprains without objective symptoms, and unknown preëxisting conditions ready to be touched off into a condition of disability, which may, perhaps, be permanent by reason of senility or other non-industrial cause. Over against this difficulty of deciding what cases properly come within the scope of the law's protection is the ever-present opportunity and obligation to render the adequate and effective service which the laws contemplate and which is of such significance for the future of the injured employer, his family, and society.

PERSISTENT PERINEAL SINUS CURED BY TRANS-URETHRAL INJECTION OF SILVER NITRATE*

BY ERIC STONE, M.D.†

THIS case is presented because of the length of time during which a perineal sinus persisted after a perineal prostatectomy, and the somewhat bizarre treatment that ultimately cured the condition.

The patient, a wiry farmer of 59 years, was first seen complaining of frequency, nocturia, dysuria and a weakened urinary stream. The prostate did not seem enlarged to rectal touch; but there was a residual urine of 120 c.c. and cystoscopy revealed a marked enlargement of the posterior commissure and moderate hypertrophy of the right lateral lobe.

After 18 days on constant urethral drainage, on December 6, 1927, a perineal prostatectomy was done under epidural anesthesia, reinforced by novocaine locally when removing the commissural hypertrophy. The operation proceeded smoothly although the posterior urethra was rent in the somewhat difficult removal of the commissural hypertrophy. A No. 30 mushroom catheter was passed through the prostatic bed into the bladder and the prostatic capsule was packed with iodoform gauze. The levator ani muscles, the superficial fascia and skin were approximated around the catheter and the pack which were allowed to emerge at the left outer angle of the inverted V perineal incision.

As bleeding had ceased the gauze pack was removed in 48 hours. The patient voided through the urethra on the tenth day and a note on the twentieth day records that the sinus was completely healed and sounds up to 26 Fr. had been passed with ease. There was no frequency, dysuria or residual urine and nocturia amounted to only one voiding. On that day he was discharged from the hospital.

The patient received weekly urethral dilatations up to 28 Fr., bladder irrigations and massage of the seminal vesicles as, although he had no complaints, pyuria persisted. Feb. 26, 1928 he developed acute left epididymitis, was confined to bed for ten days and intra-urethral treatment was omitted for 24 days. It was then found that the urethra would only admit a 12 Fr. silk whip catheter. He was to have received further dilatations but for some reason, at this late date not quite clear, he was not again seen until May 8, 1928 when he reported complaining of a burning pain in the perineum. There was bulging, tenderness, heat and reddening at the site of the drainage exit in the perineum. This opened in about 24 hours, draining pus for a few days. From then on at every voiding urine, varying from a few drops to 20 cc., would emerge.

Irrigations, urethral dilatations, indwelling catheters left in place ten days to two weeks, injections of silver nitrate, etc., into the sinus from its perineal end had no effect on the sinus. In December, 1928,

PHOTOGRAPH OF SCALE MODEL OF FLOOR OF THE PROSTATIC URETHRA.

A. Veru montanum (dilated vessels on anterior aspect). B. Urethral opening of perineal sinus. C. Polypoid vegetation. D. Internal sphincter. E. External sphincter.

an external urethrotomy was done and the sinus tract was apparently dissected out. An indwelling catheter was left in place for two weeks, and four days later the patient was discharged from the hospital with the wound healed, and voiding without leakage of urine. Within two weeks, however, the perineum had again become infiltrated, the sinus again opened and the patient's condition was exactly as before the repair.

*From the Genito-Urinary Service of the Providence City Hospital.

†Stone—Surgeon-in-Chief, Urological Service, Providence City Hospital. For record and address of author see "This Week's Issue," page 1320.

For two years the condition did not alter. There was no nocturia, frequency or residual urine; but at each voiding a few drops of urine emerged from the sinus, occasionally with a stinging sensation in the perineum. The same conservative treatments as practiced before the external urethrotomy were persistently carried out, but with absolutely no effect.

On June 23, 1931, a cystourethroscopy was done. The instrument (McCarthy's 26 Fr. Cystourethroscope) entered with ease. The bladder, trigone, ureteric orifices and internal sphincter were normal. The waterfall, frena and verumontanum were also normal. At the mid-point of the area between the anterior frenum and the external sphincter and in the right sulcus, the opening of the sinus was seen as a hole in the urethra, funnel shaped, oval, and apparently about 4 mm. in diameter. Just external to it was a bushy excrescence, sessile, polypoid and showing several central blood vessels. (See photograph of model. This model is made to scale and shows the dorsal wall of the posterior urethra as it would appear if the ventral wall had been dissected or lifted off.)

It was believed that freshening the mucous membrane edges of the sinus might lead to cicatricial closing. This was done by fulguration on July 7, 1931, and for three weeks the sino-urethral junction was fulgurated. The only result was an increase in size of the urethral end of the sinus.

On November 10, 1931, McCarthy's Ejaculatory Duct Catheterizer was introduced and a catheter passed 1.5 cm. into the sinus at its urethral stoma. Through the catheter five drops of 10% silver nitrate were instilled in the depths of the sinus. The instrument was removed and copious through and through irrigations of boric acid were immediately given. This allayed the severe urethral burning that was immediately felt, as some of the silver nitrate regurgitated into the urethra. Except for a stinging sensation deep in the urethra which persisted for about 2 hours, no untoward symptoms developed.

When the patient was seen eight days later there had been no leakage at the perineum or perineal burning on micturition for five days. A month later a 26 Fr. sound was passed without difficulty and at the present writing, February 20, 1932, there has been no return of the perineal urinary discharge or any perineal discomfort, and the patient is symptom free.

DISCUSSION

This case is reported because of the failure of the usual means of management of postoperative perineal sinuses and because of the unique manner of its ultimate cure. As far as has been shown by a hasty survey of the scant literature on the subject, this retrograde method of chemical cicatrization of such sinuses has not previously been attempted. While the success of the procedure may have been somewhat accidental in this particular instance, it nevertheless suggests a further mode of attacking similar sinuses whether postoperative, traumatic or post-inflammatory, provided that the internal orifice of the sinus can be located.

ADDRESS AT THE ANNUAL MEETING OF THE BOSTON TUBERCULOSIS ASSOCIATION, FEBRUARY 3, 1932

BY EDWARD O. OTIS, M.D.*

TUBERCULOSIS is an old, old story, and I sometimes wonder that anybody attends a meeting like this to hear the time-worn tale again. And yet tuberculosis has its dramatic or personal appeal to most of us. It was my privilege, several years ago, to visit in the great museum at Cairo, Egypt, the special rooms containing the relics from the newly discovered tomb of the young ruler of Egypt, Tut Ankh Amen, who lived two thousand or more years before the Christian Era, about the time when Ruth was gleaning in the fields of Boaz, at Bethlehem. There was his golden chariot, and many other beautiful works of art or utensils from his royal abode, just as perfect and bright as if they had recently been fashioned. I have seen it somewhere surmised that this youthful monarch died of tuberculosis. At any rate there is pretty definite evidence from the examination of Egyptian mummies that tuberculosis existed in those far distant ages. One can imagine the young Tut riding up and down along the banks of the Nile in his golden chariot with what appeared to be the flush of youth upon his cheeks, but which was in reality the hectic flush of active tuberculosis. Neither his physicians in ordinary or extraordinary could make a diagnosis of the disease or knew the value of rest, and so the poor monarch moved about until weakness compelled him to take to his bed, from which he never arose; and they buried him in his elaborate tomb with all the magnificent things of his palace about him.

Thus tuberculosis has been one of the ancient scourges of humanity, and is still being handed down from generation to generation, and that is why we are here today.

It is not so dramatic as some of the other great pestilences, like the great plague or other epidemics which did their deadly damage with overpowering suddenness, but accomplishes its destructive work by slow and continuous process, never halting and always seeking youth for its victims. Besides its dramatic appeal, tuberculosis has a personal one, for have not most of us had the sad experience of having someone in our own family or among our relatives or friends stricken with this dread disease? This experience gives us a lasting interest in what is being done to prevent its insatiable ravages.

There are two aspects in the prevention of tuberculosis which, at the present time, seem to claim the especial attention of tuberculosis workers. One is the work with children, and

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the other that with young adults, the age period at which the mortality is highest. Both classes are most appealing, and have an intimate connection the one with the other, for the more childhood infection is discovered and treated, the less likely is active tuberculosis to develop in later adult life.

We are all familiar with the ten-year program of the Massachusetts Health Department in the examination of pupils in the grade and high schools for tuberculosis or tuberculous infection. As the curve of tuberculosis mortality in children from 5 to 14 years of age is low and few at that age period develop the adult form of the disease, the main object, of course, in this State-wide examination of school children is to find out the cases of tuberculous infection as shown by the tuberculin test, or the so-called hilum tuberculosis demonstrated by the x-ray, and to afford such care as will so develop the child's resistance that the infection will not become active in adult life. Hence such preventive measures as the Prendergast camp, where only "contacts" are received, and the many other summer camps. These efforts are looking to the future, for such children are not sick in the ordinary sense and many even show the picture of health. The care of these "contacts" is an insurance for tomorrow, the ultimate objective being to lower the high death rate, which quite abruptly rises from about 15 years of age. Time alone will tell how successful these efforts have been.

When we come to early adult life, after 15 years of age and up to 35 years, and particularly the youth we meet with in high school, colleges, and in industrial pursuits, we are faced with a grave and serious condition, and a problem which has not yet, I believe, received the attention it demands. Any physician or nurse who has had much to do with tuberculosis could narrate case after case in their experience of this most tragic ending of life from tuberculosis in young persons in the beauty of youth with all its hopes and aspirations.

We may expect much in the future, as I have said, from the attention being given to children of school age.

But in the meantime, the present high death rate in young adults persists, and the demand for doing all we can to reduce it is insistent. What further preventive work can we do? In the first place, I believe that all high and preparatory school pupils, as well as college students, and such industrial workers, as could be persuaded to take the test, should be tested each year with tuberculin. It would probably not be advisable to make such a test compulsory, but much persuasion could be used to impress upon the young people and their parents the value of such a test. I do not see the necessity for x-raying all reactors, although it would be a counsel of perfection. The very fact that infection was demonstrated would put the reactor on his guard in protecting his health and seeking periodic examinations.

We require vaccination for smallpox of all public school children, and yet there were only 2 cases in this state in 1930, and 6 in 1931 with no deaths, while the cases of tuberculosis reported in 1930 were 4696 with 2423 deaths, and in 1931 there have been 4543 cases with 2204 deaths thus far reported. Although the tuberculin test is only an indication of whether tuberculous infection exists, does it not seem important enough to apply this simple and inexpensive test to as many young adults as can be persuaded to take it, or make it a part of the routine physical examination in preparatory schools and colleges? The test is so easily made that any physician can carry it out, and if necessary an expert could be called to read it. The very fact that infection existed would be a warning to take care of one's self, and would lead one, if any of the well-known symptoms should appear, to seek at once a medical examination. Those of us who have had long experience in dealing with tuberculosis can recall many a case of a student who developed tuberculosis while in school or college, or soon after, or many a young person beginning his industrial career who, if he had known that he had the infection, might have taken the proper precautions and thus have averted a fatal result.

One may say that if a tuberculous infection is found, this knowledge might keep the person in constant dread of the disease, but, on the other hand, he could be assured that the infection would probably never become active if he took care of his health, and he might thus secure immunity from subsequent exposures to the disease.

The general examination of school children which is now practiced, the proper instruction and care of those found to be infected or "contacts", the annual examination, and the use, so far as possible, of the tuberculin test with young adults, these, it seems to me, are the evident ways by which we can hope to reduce the high mortality from tuberculosis in young adults. We have already lopped off many of the hydra heads of tuberculosis, but this one of young adults still defiantly stares us in the face, and as Lincoln said of slavery, "We have got to strike it, and strike it hard."

THE SEMI-CENTENNIAL OF THE DISCOVERY OF THE TUBERCLE BACILLUS

This year marks the semi-centennial of Koch's epochal discovery of the tubercle bacillus as the cause of tuberculosis. Fifty years ago, March 24, 1882, Koch published the results of his investigations, leading to the discovery of the tubercle bacillus; thus revealing for the first time

the secret which for so many centuries had lain concealed.

A half century ago the general attitude towards tuberculosis was gloomy enough. It was generally regarded as a hopeless disease. Nobody knew how to make an early diagnosis. About all cases, when recognized, were advanced, and nobody knew how to treat the disease. No prophylactic measures were taken, and tuberculous sputum scattered the tubercle bacillus everywhere. Thus whole families contracted the disease, and the reason given was that it "ran in the family". In an inscription on an old tombstone is written this despairing appeal: "Oh insatiable consumption, Father and Mother hast thou destroyed; spare, oh spare, the children."

The poor consumptive roamed about, spraying into the air tubercle bacilli as he coughed and when he could no longer stand up he went to bed in a closed room for fear the fresh air might increase his cough, and he was dosed with cough medicine and cod liver oil until the expected fatal end came. What the mortality was fifty years ago I do not know, but in 1900, thirty-two years ago, it was 182 per 100,000, while in 1929 it was 68 in the registration area of the United States. Only typhoid fever and diphtheria can be compared with this great reduction in mortality from tuberculosis. Fifty years ago there were no sanatoria or tuberculosis clinics, and no reporting of cases; there was no x-ray to aid one in diagnosis, which Dr. Webb says is absolutely necessary in discovering the disease early. Some centuries ago some astute physicians expressed the belief that tuberculosis was contagious, and it was proved so in the last century by Klenke and Willmin, but nobody knew how it was conveyed and so the tragedy went on until, in the march of time, the science of bacteriology, the improved compound microscope, the new method of staining tissues, and a genius working with them opened the door and let in the light of the new discovery. Tennyson sings, "Science moves but slowly, slowly creeping on from point to point"; but sometimes it suddenly takes a leap, when a genius appears, and so it was with Koch's great discovery.

Hope as well as fear comes from knowledge, and so the new knowledge of the cause of this age-long disease brought the hope that in some way it could be controlled; with this knowledge and hope came action, and we see today what has been accomplished. Is it not a dramatic story?

Soon after the discovery of the tubercle bacillus came the tuberculin era, when it was thought that tuberculin prepared by Koch was, or might be, a specific cure for tuberculosis. The employment of this preparation rapidly became extensive; very large doses were used, not infrequently with disastrous effect, for nobody had any experience as to the safe dose. For many years its use continued and nobody seemed to know what value, if any, it had. So it gradually fell into disuse and now is rarely used for curative purposes.

Very many other proposed cures sprang up and had a short popularity until finally the simple and obvious treatment by rest was recognized as the all-important element in the therapy of the disease. Dettweiler first employed what he called the rest cure, but we, at the present day, should only consider it partial rest; and he regarded it only as an adjunct to the main treatment, namely, exposure to fresh air. Dr. Trudeau in this country followed Dettweiler's example, but even he did not fully conceive of the rest treatment as we know it today. It was our Dr. Pratt who taught and practiced the real rest treatment in his famous tuberculosis classes established in 1905. As time went on, he showed remarkable results from absolute and continued rest, both in afebrile as well as in febrile cases. At that time his insistence upon extreme rest was considered more or less revolutionary, and was opposed by most of the specialists in tuberculosis. It is a significant fact that a general internist should reveal to the specialist the value of prolonged and complete rest, which they all recognize today as the foundation of treatment.

Then there was the climatic dogma, that it was essential to send patients to some so-called favorable climate, and so most of our patients were advised to go to Aiken, South Carolina, Asheville, or Colorado Springs, just as in earlier years we sent them to Florida. We thought that a favorable climate was the important element in the cure. Now we know that tuberculosis can be successfully treated in any climate, and that, again, Dr. Pratt taught us in his successful experience right here in Boston. As time went on and the outstanding value of bodily rest was recognized, one began to wonder if something more could not be done to give the sick lung more rest, for however quiet the body was kept, the lung was constantly moving in the act of respiration. That was one reason, perhaps the chief one, why it was so hard to cure the diseased lung, they said. Was there any way in which the lung could be put completely at rest? Then came along the Italian physician, Forlanini of Pavia, who introduced artificial pneumothorax, whereby nitrogen gas or air is introduced into the closed pleural cavity and as no two bodies can occupy the same space, the lung is compressed as one squeezes a sponge. Again it was that same general internist, Dr. Pratt, who first tried, here in Boston, this new treatment on one of his class patients in 1909, but artificial pneumothorax could not always be applied on account of adhesions, which bound the lungs down to the side of the chest; and the specialists began to wonder if any other way could be found to

put the lung at rest. So came the operation called thoracoplasty, by which portions of all the ribs are excised, then the chest wall falls in, and the lung is permanently compressed. Here again Dr. Pratt was the pioneer and had the first or second case in this country, which was operated upon by Dr. Archibald of Montreal, and which was his second case. This occurred in 1914. Phrenicectomy was also devised, as producing partial rest to the lung by paralyzing half of the diaphragm. Thus today we have these further methods of producing rest and if we can only get cases early enough, the prospect is bright for a permanent cure.

The significance and value of Koch's great discovery was rather slowly appreciated, both by the profession and the laity, but as time went on, the profession and the laity began to take an increasing interest in the prevention and control of tuberculosis. Nearly thirty years ago, the National Tuberculosis Association was founded and has become the greatest voluntary health association in the world. Then came various state and local tuberculosis organizations. Lectures on tuberculosis before women's clubs and other bodies became popular, and so the great movement for the prevention and control of tuberculosis has progressed, until today it has become a great organized health force, extending all over the country.

With a knowledge of what has already been accomplished in the last fifty years, is it too much to expect that we shall so far conquer tuberculosis that it will disappear from the list of major diseases, as has happened with leprosy which once overspread Europe? Indeed, this is rapidly being brought about.

But in our exultation of what has already been accomplished, and our hope for the future, we must remind ourselves that the end has not yet been attained. We have still that high peak in the mortality curve, and there I believe should be the forefront of our battle-line. We must be still achieving, still pursuing, still laboring, looking back upon our accomplishments of the last fifty years for encouragement and incentive for the future.

REDUCTION IN THE COST OF RADIUM

Dr. J. C. Bloodgood, Professor of Surgery at the Johns Hopkins University and very much interested in the cancer problem, has just returned from a visit to London and Paris where he delivered lectures on the control of cancer and studied the methods in use in those cities for the prevention and cure of the disease. Dr. Bloodgood is reported as having said that the United States has made as much progress in the treatment of cancer as any country in Europe. Although no cure for cancer has been discovered, he has stated that experiments are being made dealing with radium salts around the cancer which will make possible the application of this remedy at less cost than under existing methods. He found that in certain countries the sentiment was very definitely in favor of the establishment of cancer hospitals where both x-ray and radium could be used to the best advantage.

With reference to the problems under consideration, Dr. Bloodgood stated that the greatest need is for trained radiologists. The sooner the country starts on this venture the better. Younger graduates in medicine should see the writing on the wall and make themselves expert radiologists.

MONTHLY ALLOWANCES FOR STUDENT NURSES

Dr. May Ayres Burgess has reported in the June number of the *American Journal of Nursing* that Student Nurses in 78 per cent of nurses' training schools get a monthly allowance and an additional 10 per cent of them are paid an allowance but are charged for tuition. Allowances vary from $10 per month to as high as $60 per month; the higher amounts are usually paid by hospitals for the care of mental cases.

Tuition costs vary from $5 up, a few schools charging as much as $300.

Dr. Burgess suggests that the practice of paying allowances might well be discontinued, the sum thus saved being used for instruction and better head-nurses.

THREE HUMPS TO LEVEL

The death rate from tuberculosis is declining. This is a well-established fact, not only in this country, but in other countries and in all groups of the population. There are still three humps or mountains in the mortality curve, however, which must be leveled before any further great declines will be noted. These three "humps" are for young women, men in industry, and Negroes.

Recent studies regarding groups of young women and of Negroes have pointed the way by which the high mortality in these groups might be lowered. For men in industry, there are few signposts to direct our way toward a future program. We know that certain occupations in which sharp dusts, such as are given off by metal or granite, cause changes in the lung which induce tuberculosis. These are only a few of the hundreds of occupations in the United States, however.

What we should have, in order to map an intelligent program for the reduction of tuberculosis among industrial workers, is a series of tuberculosis death rates *by occupation*. There are no such figures in the United States today. England and Wales prepare a volume on occupational mortality every ten years after the decennial census. Our country could do the same if we chose to spend our funds that way. The National Tuberculosis Association has spent time and money in an effort to prepare the way for such tables by loaning a person to do experimental work in the United States Census Bureau. This organization can go no further. From this point on, the work can be done only by the Census Bureau itself.—*Bulletin National Tuberculosis Association.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 18251

CHILLS AND JAUNDICE COMPLICATING APPENDICITIS

SURGICAL DEPARTMENT

PRESENTATION OF CASE

DR. CLIFFORD C. FRANSEEN*: This is the case of a twenty-six year old Swedish painter who entered the Emergency Ward complaining of dull abdominal pain of two days' duration.

Three weeks before admission he had his tonsils and adenoids out at the Eye and Ear Infirmary. Otherwise he had been quite well until two days before admission, when he was awakened by a sharp constant pain in the upper abdomen, followed by vomiting. He took a laxative, although his bowels had been moving regularly. The pain grew more severe throughout the day. The vomiting continued and he had a severe chill. His doctor told him he had appendicitis but that it was no emergency, and put an ice bag on his abdomen. On the day before admission the pain had abated somewhat, but he had developed a severe frontal headache. He continued to vomit.

Physical examination showed a well nourished man complaining of severe headache. The heart and lungs were normal. There was a large area of erythema over the upper abdomen. The abdomen was fairly rigid throughout. There was tenderness on deep pressure over the right lower quadrant. There was moderate tenderness in the right flank also. There was fairly vigorous peristalsis. Rectal examination showed tenderness along the right side.

The white blood cell count was 15,000.

The temperature was 100.5°, the pulse 120. The respirations were 25.

Appendectomy with drainage was done under ether. A ruptured gangrenous appendix was found, with gross contamination of the peritoneal cavity. On the fourth postoperative day he had a severe chill. On each succeeding day he had from two to five chills. His temperature would go up as high as 105°. On the fifth day there was a suggestion of a slight icteric tint to the sclerae. The bilirubin was 5.06. A wound culture gave only a growth of diphtheroids.

Consultants agreed on a fatal prognosis. There was a discussion as to what treatment should be given, if any. The frequent chills and the picket-fence type of fever continued. The patient grew gradually weaker over many days. He became more jaundiced. The white blood cell count was 8,000 on the seventh day. Blood cultures gave no growth.

On the sixteenth day the patient became distended and began to vomit. Gastric lavage yielded 56 ounces. The white cell count was 29,000. A blood transfusion was given. The patient continued to grow progressively weaker. The bilirubin was 10.12. He developed signs of pneumonia at both lung bases, became delirious, and died the twenty-first day after operation.

*Senior interne on the West Surgical service.

CLINICAL DISCUSSION

DR. GEORGE W. HOLMES: He had two sets of films taken here, one on the ninth day after operation and one on the fifteenth. This is a portable film of the chest only. This film was taken at forced inspiration, or as near that as we could get. The second film is a double exposure to show the respiratory movements of the diaphragm. The diaphragm moved normally on the right. The position of the diaphragm I should say is about normal for a patient lying on his back in bed. The inspiratory movement on the right with the position would rule out any such thing as abscess between the diaphragm and the liver. On the left side there is a hazy rather mottled appearance just above the diaphragm. As far as I can make out there is no respiratory motion on that side. The second series of films taken in the same way rather confirms the previous one. The process at the left base is more distinctly seen. There is still no definite evidence of movement of the diaphragm on that side. On the right side movement is present. There is nothing abnormal in the right lung. There is a possibility I should think that there was a definite process at the left base and that it might very well be an infarct. The character of the shadow is rather against ordinary pneumonia. It is well out in the periphery and the shadows are more linear than round as pneumonia usually is. The fact that the diaphragm is not elevated would be against there being a subdiaphragmatic abscess on the left with extension into the lung.

DR. JOHN D. STEWART: One other point might be added in respect to the history. When the first history was taken in the Emergency Ward we did not get the story of a chill with the onset of the illness. Afterwards on closer investigation it seemed that he had had two real shaking chills. The question might be asked whether we should not have been more alert in making the diagnosis before operation, because of course chills are very unusual in acute appendicitis. At the time of operation the appendix when brought out was grossly perforated and there were free

feces in the peritoneal cavity. In following the case after operation we were confronted with a very distressing problem, because the diagnosis became evident fairly early in his convalescence. About the fifth day we felt reasonably certain that the patient had pylephlebitis. At that time his general condition was excellent. He was mentally alert and his appetite was good. He was fairly comfortable, and he had every expectation of getting well. We simply had to sit by and watch him slowly lose strength. Towards the end he became too exhausted even to have more chills.

Dr. Edward D. Churchill: A chill at the onset of acute appendicitis is a very ominous happening, as shown by this case. It is associated with vein or blood stream infection, and in appendicitis means probably phlebitis of the ileocolic vein or its radicles. The infection ascends to involve the portal vein and the liver with, as in this case, definite frank pylephlebitis or occasionally multiple abscesses. It is undoubtedly one of the most trying experiences of surgery to see an otherwise perfectly healthy young man develop this condition and to be obliged to give his family a very grave prognosis. The family wants to know if there is not something we can do. There is nothing we can do by surgery. We watch for any indication that a peripheral liver abscess is forming or rupturing into the subphrenic space or presenting in any region that we can reach to drain. If so we probably should drain it; but in practically every instance there are multiple abscesses, many in totally inaccessible regions. In this case we did not feel at any time that there was an indication of the formation of a peripheral abscess, and this man died with a diagnosis of pylephlebitis without localized abscess formation.

Dr. Lincoln Davis: These cases are tragic. I think that occasionally pylephlebitis will occur after what seems to be a very mild attack of appendicitis. The last case I saw was that of a young man who certainly had definite signs of liver abscess. Going back over the history very carefully it seemed that he had had a very mild attack of appendicitis not recognized and not operated upon. He eventually died of liver abscess.

I remember that a good many years ago we had a number of these cases in the hospital. Looking up the literature at that time we found that some of the German surgeons had tied off the ileocolic vein. It was rather a dangerous thing to do, and not very rational in a way, because by the time you have made the diagnosis the damage is done. I do not know whether anything further along that line has been done or not.

Dr. Chester M. Jones: I saw this patient I think the day that the jaundice appeared. It seemed to me that clinically it was a pretty typical case of pylephlebitis. There did not seem to be anything to be done at the time. I think this case points out, as many of our cases do, the value of complete histories. Very frequently we do not take intelligent histories. I do not know whether a more complete history would have been a help or not.

Dr. A. William Reggio: The thing that comes to my mind about this case is that the attack came four weeks after the tonsillectomy. I have seen several cases of appendicitis coming on within a month after tonsillitis or after sore throat, and I have always had my fingers crossed on those cases. Whether there is blood stream infection still present at the time and the appendix comes on at a time of lowered resistance I do not know. That is merely a personal feeling; I have not seen anything to back it up. I do not know how other men feel about it.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Acute appendicitis with perforation.
Pylephlebitis.

ANATOMIC DIAGNOSES

(Acute gangrenous appendicitis with perforation.)
Pylephlebitis.
Thrombophlebitis of both iliac veins and the left inferior hemorrhoidal.
Septic infarcts of the lungs.
Slight glomerular nephritis.

PATHOLOGIC DISCUSSION

Dr. Tracy B. Mallory: We found at autopsy a definite pylephlebitis. The veins ascending through the mesentery to the region of the cecum all showed a purulent thrombophlebitis. Around one of the veins there was a definite abscess, but for the most part the evidence of sepsis was within the vascular tree. It had spread up through the portal vein, did not involve the splenic, and extended into the liver, where there were numerous dilated veins but no abscesses of the parenchymal tissue. The liver was large, weighing over 3000 grams. I think one might reasonably have assumed that there was a liver abscess to account for such hypertrophy. As a matter of fact the huge size of the liver was entirely due to massive fat infiltration. Every liver cell showed extreme fat vacuolization but practically nothing else.

With a low power view of the liver one can see why it should be so enormous. It looks almost like a section of a lipoma. There is absolutely no sign of infection in the smaller radicles of the portal vein. The process is limited exclusively to the larger ones. We found also a marked thrombophlebitis of the two iliac veins and of the left inferior hemorrhoidal, on the opposite side of the pelvis from the appendix. I do not see how a di-

rect connection can be made out between those and the pylephlebitis, so that we must assume a metastatic infection. Secondary undoubtedly to the infection of the iliac veins was a series of septic infarcts in the lungs.

There was also a very slight glomerular nephritis, I think essentially only a microscopic lesion. I doubt if it played any rôle in the symptomatology.

DR. JONES: Do you ever get a single liver abscess with a story like this?

DR. MALLORY: I should say we had seen them.

DR. CHURCHILL: Dr. D. F. Jones saw this patient in consultation and said that a long time ago one of the first cases he had seen developed a solitary liver abscess. It was drained and the patient got well. While Dr. Jones was optimistic about the possibility of draining such an abscess, he saw no indication of such a state of affairs in this case.

DR. DAVIS: I can remember when I was consultant at the Eye and Ear Infirmary several years ago that when the procedure of tying off the internal jugular vein first came into vogue it made a tremendous amount of difference in the percentage of septicemias following mastoid operation with lateral sinus thrombosis at that institution. Of course it is done now as a matter of routine. This is a very different proposition. We have not one single vein draining that region. If however it were possible to block off the main trunk of infection it would seem a wise thing to do if we could do it fairly early. It has been tried out; whether it has been entirely abandoned or not I do not know. It is conceivable that if one has tied off the main source of infection, possibly the liver might be able to take care of a moderate amount of infection. It would be interesting if somebody would review the literature of the subject, because there was considerable activity about it some years ago.

DR. STEWART: We looked up what literature we could lay hands on in respect to ligation. There are a few references in the German literature to this procedure. Also Neuhof in 1913 spoke of the operation, but he had not done it himself. There is also a communication on the subject by Colp of New York. He recommended that in cases of acute appendicitis where there is a definite chill before operation, it would be wise to examine the tributaries to the portal vein. If veins are found to be thrombosed he would recommend ligation at the time of the appendectomy. He had a series of four cases, as I recall it, in which he had considered this operation. In three cases he had actually ligated the ileocolic vein, there being a history of chills before operation. Those three patients recovered uneventfully. In the other case in which there were chills before operation he recommended ligation. It was not done. He did not do the appendectomy himself. In time the patient went on to a fatal pylephlebitis. Colp's experience in these few cases led him to consider the procedure very favorably.

DR. MALLORY: We certainly have evidence of very generalized sepsis before the termination of this case. I do not believe it is possible to set any exact time intervals. We do not know at what stage this thrombophlebitis of the iliac veins developed. It is perfectly possible that it may have been coincidental with the onset, although it is also perfectly possible that it was merely a terminal complication.

CASE 18252

AN EXAMPLE OF THE VALUE OF BIOPSY EXAMINATIONS

MEDICAL DEPARTMENT

PRESENTATION OF CASE

DR. EARLE M. CHAPMAN*: A seventy-two year old French Canadian lumberman entered with the chief complaint of epigastric pain of ten months' duration.

The story of the present illness was that he had suffered from indigestion for a great many years, but about one year before entry he began to have definite localized midepigastric pain which came usually about an hour after meals, was relieved by food, and passed away only to return two or three hours after meals. At that time he consulted a doctor. Later he entered a hospital, where a cautery excision of an ulcer and a posterior gastro-enterostomy were done. For two months following this the symptoms were entirely relieved. Then all the symptoms returned, indigestion with localized midepigastric pain coming about an hour and a half after meals during the day, though at this time the pain was more severe at night. He had tarry stools. Constipation increased during the last month before entry. He lost 35 pounds.

The family and past history as obtained were unimportant.

Physical examination at entrance showed an old man with evidence of loss of a good deal of weight. His skin was dark, brownish, and showed excoriated areas. He showed several soft glands one to two centimeters in diameter in the right supraclavicular area. In the right axilla there was a gland three to four centimeters in diameter with an operative scar over it. He gave a history that glands had been removed from this region three years before at a hospital. Pathologic examination of these glands had not been done. The heart was slightly enlarged to the left. The blood pressure was 116/60. Examination of the chest showed at the left base posteriorly below the midscapular area dullness and diminish-

*Resident on the West Medical Service.

ed breath sounds and tactile fremitus. Vocal resonance however was said to be normal. In the abdomen was a right rectus operative scar with a large herniation. Through the diastasis of the rectus we could easily feel the edge of a firm and tender liver which came down two or three fingerbreadths below the right costal margin. He also had a scar in the right inguinal area from an old herniotomy. The remainder of the examination was not remarkable.

Laboratory work showed the slightest possible trace of albumin in his urine, with 2 to 35 white cells and 0 to 10 red cells per high power field and occasional granular and hyalin casts. The specific gravity was as high as 1.022. The blood showed a secondary anemia, a red cell count of 3 million, hemoglobin 50 per cent, white cell count 5,500. A differential count showed 91 per cent polynuclears. The stools on three occasions showed a moderately positive guaiac. Gastric analysis showed absence of free hydrochloric acid but a total acidity of 15 to 33.

In this hospital a diagnosis of gastric ulcer was made at first but later changed to carcinoma of the stomach. He was however put on an ulcer régime. He failed to respond to this treatment. For the first ten days he was practically afebrile. Then he had a low grade fever which towards the end reached 102° on several occasions. From this point he went rapidly downhill. At the end of five weeks he died.

Dr. Aubrey O. Hampton: Here is the first examination of the stomach, a lateral view showing the posterior gastro-enterostomy and a deformity of the antrum. We thought that this deformity was not all due to organic disease but probably was mostly spasm, because we have another film here which shows the deformity changed. We did find a crater and tried to demonstrate its size, but we were not very successful. It appeared as though there were an area of induration around the crater. The whole lesion was 4 centimeters in diameter at that time. We do not see the crater in the films. We thought we could see a few gastric rugae in the area of spastic deformity. We thought he had a malignant ulceration.

Dr. Tracy B. Mallory: You also made a comment on the iliac joints.

Dr. Hampton: We thought he had Paget's disease. A very thick iliac bone is about all one can see in these films taken to show the stomach.

A Physician: Have you an x-ray of the chest?

Dr. Hampton: Yes. It demonstrates dullness at the left base which partially obliterates the diaphragm. The dullness swings up in the axillary line like fluid. We also attempted to demonstrate masses at the lung roots, but we were not very successful. The lung roots are larger than usual, but in an elderly person might be interpreted as normal.

Clinical Discussion

Dr. Mallory: I wonder if anyone will hazard a guess as to the diagnosis at this stage.

Dr. Chester M. Jones: Might he have had Hodgkin's disease?

Dr. Mallory: It certainly would be a possibility. As far as we can find out this original mass of glands removed from the axilla three years before death was never examined histologically.

Dr. Frederick T. Lord: The chest findings suggest atelectasis from occlusion of the bronchus, but a similar complex of signs obtains also with tumor, cyst, unevacuated abscess and elevated diaphragm.

Another Physician: They excised this ulcer in the other hospital. Have you any pathologic report on that?

Dr. Mallory: No; that again, as far as we can find out, was never examined.

Clinical Diagnoses (From Hospital Record)

Carcinoma of the stomach.
Bronchopneumonia.

Anatomic Diagnoses

Lymphoma, Hodgkin's type, with involvement of the stomach, lungs, liver, spleen, bone marrow and lymphoid tissue.
Hypertrophy of the heart.
Gastro-enterostomy.
Pleural effusion.
Arteriosclerosis.
Coronary sclerosis.
Diverticula of the bladder.

Pathologic Discussion

Dr. Mallory: He had an annular tumor in the stomach. It showed a central ulceration which looked grossly exactly like cancer. We thought it almost certainly was that. The liver was large and contained tumor nodules. The lung had numerous nodules. The most striking finding, we thought, was that the spleen weighed 800 grams and was filled with white firm nodules. Carcinoma metastasizing to the spleen is in my experience extremely rare. Dr. Shields Warren at Pondville, where they see the most advanced stages of cancer, does find carcinoma in the spleen in something like 10 to 15 per cent of autopsies. We have had only one case in the last thousand autopsies here. Certainly in the stages of cancer which we see at this hospital it is extremely rare to find metastases in the spleen, and if we have an enlarged nodular spleen we can feel pretty safe in calling it Hodgkin's or at least some type of lymphoma. That is what this case turned out

to be,—histologically typical Hodgkin's disease.

DR. LELAND S. MCKITTRICK: Did those nodules closely resemble carcinoma?

DR. MALLORY: In both the liver and the spleen they looked like Hodgkin's. There are fairly characteristic differences between cancerous and Hodgkin's nodules. A carcinomatous nodule in the liver is of a pretty uniform white color and almost invariably shows an umbilicated center. In contrast a Hodgkin's nodule in either the liver or the spleen will almost always have one or two red bands running across it and umbilication is infrequent. We may have a central hemorrhagic spot in the depressed part of a cancer nodule, but it has not an actual band running through it. In Hodgkin's a gross nodule is usually made up of two or more small ones. In cancer each nodule almost always is a single entity.

Sections from the liver, spleen, lung and lymph nodes all show typical Hodgkin's disease with fibrosis, eosinophilia and Sternberg cells.

Unfortunately we did not know about the x-ray report on the iliac bones at the time of autopsy. Examination of the vertebrae however showed that the marrow of several of them had been completely replaced by very fibrous Hodgkin's disease, so that we at least might suspect that some of those lesions in the ileum may also have been Hodgkin's.

Microscopic examination of the stomach showed a shallow zone of tumor replacing the mucosa. The cells in the section are different from those in the spleen, more obviously neoplastic, more like what we call lymphosarcoma. It is not at all unusual in certain stages of Hodgkin's disease to get a pretty definitely sarcomatous process, and the most inveterate upholders of the infectious theory all admit that some of these must be classified as neoplasm.

DR. JONES: The very high polynuclear count is of some interest because it is more like the so-called typical Hodgkin's than like carcinoma. One would not expect to find carcinoma with such a high polynuclear count.

DR. MALLORY: Yes; that is a relatively low white cell count in the face of secondary anemia, too. This is a case which very easily could have been diagnosed at any stage if a careful histologic examination had been made at any period during the three years.

A PHYSICIAN: What do you think was the immediate cause of death?

DR. MALLORY: I have no particular idea. I should think Hodgkin's as much as anything else.

A PHYSICIAN: Were there any abdominal glands?

DR. MALLORY: There were fair sized retroperitoneal glands.

DR. HAMPTON: Was any part of the small bowel involved?

DR. MALLORY: No. This type of Hodgkin's relatively rarely involves the intestinal tract. The diffuse lymphosarcoma type very frequently does. This is the first time I remember seeing the typical Hodgkin's type which had involved the stomach extensively.

A PHYSICIAN: It probably did not start in the stomach. It was probably metastasis to the stomach.

DR. MALLORY: I think that is possibly a little safer. Those axillary nodes that were removed were probably the first signs of the disease. The nodule at the apex of the lung was big enough so that I am surprised it did not show.

DR. HAMPTON: How long before death was that last film taken?

DR. MALLORY: Eight days.

DR. HAMPTON: I do not know where all these lung lesions are. I cannot see them in the x-rays.

DR. MALLORY: The one at the left apex was 4 centimeters in diameter.

A PHYSICIAN: What was the explanation of the density at the left base?

DR. MALLORY: We did not find any explanation.

DR. HAMPTON: Part of it was due to the elevated diaphragm I suppose; but the obliteration of the costophrenic angle suggests fluid or pleural disease.

DR. MALLORY: Most of the lesions at the apices were on the left, though there were also some on the right. There was a little fluid but not much.

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MILK REGULATION BOARD

SENATE Bill No. 424*, dated June 1, 1932, an act establishing a Milk Regulation Board and Further Regulating the Production, Sale and Distribution of Milk, deserves close scrutiny. Under its provisions "there shall be a milk regulation board, consisting of the commissioners of agriculture, the commissioner of public health and the attorney general, ex-officiis. Said board, after holding a public hearing in the commonwealth, etc., shall establish and promulgate, and may from time to time amend, modify, repeal or suspend, rules and regulations, including uniform minimum requirements, for the inspection of dairy farms producing milk for distribution, sale or exchange in the commonwealth."

The director of the division of dairying and animal husbandry of the department of agriculture is designated as the director of the board, and it shall be his duty and privilege to issue and from time to time renew certificates of registration for dairy farms. At least one inspection of a farm must be made within a year prior to registration, and the director shall accept the inspection reports of milk inspectors and agents of local boards of health within the commonwealth in respect to farms located within or without the commonwealth which have been inspected by them. Milk dealers, not producers, shall annually register as such with the directors.

Section 3 further states that if, at any time, the board believes that a shortage of milk exists or is threatened anywhere within the commonwealth, temporary certificates of registration shall without inspection be issued for nonregistered dairy farms in such numbers and in such areas as the board may deem wise—a curious safety-valve clause which might easily, for a given period, nullify the whole value of the act, if its value be construed as safeguarding the milk supply of the commonwealth.

Another curious provision—if, again, the bill is to be construed as an attempt to safeguard the milk supply of the commonwealth—is that which grants to existing producers a period of eighteen months, and to dealers a period of twelve months after the effective date of the act to function pending the issuance or refusal to issue a certificate of registration by the director.

If the passage of this bill will insure minimum requirements of milk production of a reasonably high standard, under adequate state control, allowing municipalities to insist upon still higher standards if they so desire, then it is a step in the right direction. If it will result only in the duplication of present efforts or the mere rubber stamping of them, as the provision that the director shall accept the inspection reports of milk inspectors and agents of local boards of health, which may be entirely inadequate, suggests, then its provisions should be still further modified.

*Full text of this bill appears on page 1321.

PERTINENT FACTS IN THE REPORT OF THE MARCH EXAMINATION CONDUCTED BY THE BOARD OF REGISTRATION IN MEDICINE

THE figures of the results of the March examination conducted by the Massachusetts Board of Registration in Medicine show that of the ninety-nine applicants for registration fifty-six were found to be lacking in the qualifications which would warrant permission to practice medicine in this Commonwealth. Fifty per cent of the graduates of the College of Physicians and Surgeons of Boston failed, six of the seven graduates of the Massachusetts College of Osteopathy and seventeen of the twenty-one graduates of the Middlesex College of Medicine and Surgery were also found to be unable to secure an approved rating. These records are

impressive because these specified institutions have been in operation a considerable number of years and have given to their students diplomas which carry small assurance of success in applying to the Board of Registration in Medicine.

Some of the students who have graduated from the College of Physicians and Surgeons have never appeared to be proud of their Alma Mater and have been conscious of the disadvantages inherent in the record of the training in that institution.

The Middlesex College makes a still worse showing in this examination so far as the figures cited above are indicative of the attainment of its graduates.

The changes taking place in medical education and the attitude of nearly all of the States in the Union make Massachusetts stand as a sponsor of institutions with very limited recognition elsewhere. Middlesex has made urgent appeals for contributions of money to increase its endowment and it would seem reasonable to suggest that anyone inclined to assist in supporting medical schools ought to make a study of the quality of the finished product of educational institutions. Such kindly disposed persons might use information thus acquired to the advantage of the higher grade schools.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

HOWES, FRANK M. A.B., M.D. Harvard University Medical School 1910. Visiting Physician, St. Luke's Hospital, New Bedford. Physician-in-Charge of Cardiac Clinic, St. Luke's Hospital, New Bedford. Member of Directing Staff, Sol-E-Mar Hospital, No. Dartmouth. His subject is "Angina Pectoris and Its Treatment." Page 1281. Address: 135 Cottage Street, New Bedford, Mass.

WHITE, PAUL D. A.B., M.D. Harvard University Medical School 1911. Physician, Massachusetts General Hospital. Instructor in Medicine, Harvard Medical School. His subject is "Precordial Pain and Tenderness." Page 1283. Address: Massachusetts General Hospital, Boston.

FREMONT-SMITH, FRANK. M.D. Harvard University Medical School 1921. Assistant Professor of Neuropathology, Harvard Medical School. Assistant Visiting Physician, Neurological Service, Boston City Hospital. His subject is "The Mechanism of Edema Formation." Page 1286. Address: Boston City Hospital, Boston.

HENDERSON, GEORGE D. M.D. Western Reserve University School of Medicine 1900. F.A.C.P. Visiting Physician, Holyoke Hospital. Chief of Out-Patient Department, Holyoke Hospital. His subject is "Drug Treatment of the Edema in Congestive Heart Failure." Page 1286. Address: 312 Maple Street, Holyoke, Mass.

HAMILTON, BURTON E. A.B., M.D. Harvard University Medical School 1910. Consultant, Cardiovascular Diseases at Boston Lying-In, New England Deaconess and Palmer Memorial Hospitals. On Medical Staff of Faulkner Hospital. Instructor in Medicine, Harvard Medical School. His subject is "Local Treatment of Edema in Congestive Heart Failure." Page 1290. Address: 319 Longwood Avenue, Boston.

GREENOUGH, ROBERT B. A.B., M.D. Harvard University Medical School 1896. F.A.C.S. Consulting Surgeon, Massachusetts General Hospital and Collis P. Huntington Memorial Hospital. Assistant Professor of Surgery, Medical School of Harvard University. Address: 8 Marlborough Street, Boston. Associated with him are:

GRAVES, WILLIAM P. A.B., Sc.D., M.D. Harvard University Medical School 1899. F.A.C.S. Baker Professor of Gynecology, Harvard Medical School. Surgeon-in-Chief, Free Hospital for Women. Consulting Gynecologist, Boston Lying-In Hospital. Address: 198 Commonwealth Avenue, Boston. And

SIMMONS, CHANNING C. M.D. Harvard University Medical School 1899. F.A.C.S. Visiting Surgeon, Massachusetts General Hospital. Acting Surgeon-in-Chief, Collis P. Huntington Memorial Hospital. Associate in Surgery, Harvard Medical School. Address: 205 Beacon Street, Boston. And

JONES, DANIEL F. B.A., M.D. Harvard University Medical School 1896. F.A.C.S. Chief of Staff, Palmer Memorial Hospital. Associate in Surgery and Courses for Graduates, Harvard Medical School. Honorary Consulting Surgeon, New England Deaconess Hospital. Address: 195 Beacon Street, Boston. And

DALAND, ERNEST M. A.B., M.D. Harvard University Medical School 1918. F.A.C.S. Instructor in Surgery, Harvard Medical School. Surgeon, Collis P. Huntington Memorial Hospital. Chief of Visiting Staff, Pondville State Cancer Hospital. Chief, Surgical Out-Patient Department, Massachusetts General Hospital. Address: 483 Beacon Street, Boston. And

FRIEDMAN, HARRY F. M.D. Vanderbilt University Medical School 1912. Professor of Clinical Radiology, Tufts College Medical School. Chief of Cancer Clinic, Boston Dispensary. Radiologist, New England Medical Center. Attending Radiologist, Beth Israel Hospital. Consulting Radiologist, Westboro State Hospital. Consulting Radiumtherapist, New England Hospital for Women and Children. Address: 270 Commonwealth Avenue, Boston. Their subject

is "Report of the Cured Cancer Clinics Held on April 5 and 6, 1932 at the Massachusetts General, Collis P. Huntington Memorial and Palmer Memorial Hospitals, the Free Hospital for Women, and the State Cancer Hospital at Pondville." Page 1294.

WOLBACH, S. BURT. M.D. Harvard University Medical School 1903. Shattuck Professor of Pathological Anatomy, Harvard University. His subject is "What Can the Surgeon Expect in the Way of Guidance in the Treatment of Cancer From the Pathologist?" Page 1299. Address: 240 Longwood Avenue, Boston.

GRAVES, WILLIAM P. For details see above. His subject is "Summary of Cured Cancer Clinics." Page 1302.

FINLEY, JOHN. A.M. Johns Hopkins. LL.D. Knox University of Wisconsin, Princeton, Dartmouth, Columbia and several other colleges and universities. A varied experience as Editor, serving in this capacity as Associate, for the *New York Times* since 1921 having had a long association with many official and civic organizations. His subject is "The Importance of the Informed Public Opinion." Page 1304. Address: *New York Times*, New York, N. Y.

CLARK, LINDLEY D. A.B., A.M., LL.B., LL.M. Formerly Economist in charge of Division of Industrial and Economic Law, U. S. Bureau of Labor Statistics. Author of Law of the Employment of Labor (Macmillan) and numerous bulletins and articles in cyclopedias, year books, etc., on workmen's compensation and labor matters generally. His subject is "Workmen's Compensation Legislation of the United States with Special Reference to the Medical Aspects." Page 1307. Address: United States Employees' Compensation Commission, 100 South Gay Street, Baltimore, Md.

STONE, ERIC. S.B., M.D. Harvard University Medical School 1918. F.A.C.S. Surgeon-in-Chief, Urological Service, Providence City Hospital. Consulting Urologist, Providence Lying-In Hospital. Junior Surgeon, Gynecological Service, Rhode Island Hospital. His subject is "Persistent Perineal Sinus Cured by Trans-Urethral Injection of Silver Nitrate." Page 1309. Address: 199 Thayer Street, Providence, R. I.

. OTIS, EDWARD OSGOOD. A.B., Sc.D., M.D. Harvard University Medical School 1877. Professor (emeritus) Tufts Medical School. Honorary President, Massachusetts Tuberculosis League and of the Boston Tuberculosis Association. Honorary Director of National Tuberculosis Association. President of the American Climatological Association. His subject is "Address at the Annual Meeting of the Boston Tuberculosis Association February 3, 1932." Page 1310. Address: 81 Front Street, Exeter, N. H.

MASSACHUSETTS LEGISLATIVE NOTES

SENATE—NO. 424

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Thirty-Two

An Act establishing a Milk Regulation Board and Further Regulating the Production, Sale and Distribution of Milk

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Chapter six of the General Laws, as most recently amended in section seventeen by section two of chapter four hundred and fifty-two of the acts of nineteen hundred and thirty-one, is hereby further amended by inserting after the word "Massachusetts" in the sixth line the words:— , the milk regulation board,—so as to read as follows: —*Section 17.* The armory commissioners, the art commission, the commission on administration and finance, the commissioner of state aid and pensions, the commissioners on uniform state laws, the public bequest commission, the state ballot law commission, the board of trustees of the Soldiers' Home in Massachusetts, the milk regulation board and the trustees of the state library shall serve under the governor and council, and shall be subject to such supervision as the governor and council deem necessary or proper.

SECTION 2. Said chapter six is hereby further amended by adding, after section forty-one, added by section three of chapter four hundred and fifty-two of the acts of nineteen hundred and thirty-one, under the heading, MILK REGULATION BOARD, the following new section:—

Section 42. There shall be a milk regulation board, consisting of the commissioner of agriculture, the commissioner of public health and the attorney general, ex-officiis. Said board, after holding a public hearing in the commonwealth, notice of which shall have been given, at least two weeks prior to the date of the hearing, by publication in each county in a newspaper of general circulation therein, shall establish and promulgate, and may from time to time amend, modify, repeal or suspend, rules and regulations, including uniform minimum requirements, for the inspection of dairy farms producing milk for distribution, sale or exchange in the commonwealth. Said board shall provide suitable uniform cards for the classification of dairy farms producing milk for said purposes, and shall furnish suitable plans, information and advice relative to the construction, installation and development of facilities for improving the quality of milk. For the purposes of sections sixteen to sixteen J, inclusive, of chapter ninety-four, the director of the division of dairying and animal husbandry of the department of agri-

culture shall act under the supervision and control of said board.

SECTION 3. Chapter ninety-four of the General Laws is hereby amended by striking out section sixteen and inserting in place thereof the eleven following new sections:—

Section 16. For the purposes of sections sixteen to sixteen J, inclusive, the following words shall have the following meanings:

"Board", the milk regulation board, established under section forty-two of chapter six.

"Dairy farm", a place or premises where more than one cow is kept and a part or all the milk produced thereon is sold or delivered for sale to any person.

"Director", the director of the division of dairying and animal husbandry of the department of agriculture.

Section 16A. Except as provided in section sixteen I, no milk shall be sold or offered or exposed for sale, for use or disposal elsewhere than on the premises where produced, unless it has been produced on a dairy farm as to which a certificate of registration has been issued by the director as hereinafter provided and unless said certificate is in full force and effect.

Section 16B. Applications for the registration of dairy farms hereunder shall be made upon blanks furnished by the director and shall contain, in addition to such other information as may be required by the director, a statement of the name, place of residence and business address of the applicant, the amount of milk produced on his dairy farm during the calendar month last preceding the date of application, the number of dairy cows more than two years of age and the number of heifers less than two years of age kept on said dairy farm during said month, the names and business addresses of dealers, distributors or wholesale purchasers who receive milk from said dairy farm, together with a statement of the estimated amount of milk to be supplied each dealer, distributor, or wholesale purchaser during such period as may be designated by the director. Every statement shall be verified by oath or written declaration that it is made under the penalties of perjury.

Section 16C. The director may issue, and may from time to time renew, certificates of registration for dairy farms. No certificate of registration for a dairy farm shall be issued or renewed by the director, except as hereinafter provided, until he has made or caused to be made at least one inspection of said farm within one year prior thereto, and unless said inspection clearly indicates a satisfactory compliance with the uniform minimum requirements for dairy farm inspection established under section forty-two of chapter six. The director shall accept the inspection reports of milk inspectors and agents of local boards of health within the commonwealth in respect to dairy farms located within or without the commonwealth which have been inspected by them, and certificates of registration shall issue when inspection reports on cards provided by the board indicate to the director's satisfaction that such dairy farms have complied with said minimum requirements. Each dairy farm registered by the director shall receive a numbered certificate of registration which shall be conspicuously posted at all times in the milk house of said farm. Each certificate of registration of a dairy farm located in the commonwealth shall expire on the following June thirtieth, and each certificate of registration of a dairy farm located outside the commonwealth shall expire on such date as the board shall determine, but not within one year from its date of issue. Annual applications for renewal of certificates shall be made not less than thirty days prior to the expiration date on forms furnished by the director. If a certificate of registration is lost, duplicate copies may be obtained from the director at a cost of fifty cents each.

Section 16D. Certificates of registration may be refused, suspended or revoked by the director for failure to comply with such rules, regulations and uniform minimum requirements; provided, that before any such suspension or revocation becomes effective, or upon such refusal, the parties concerned shall be given a hearing before the director or a person designated by him for such purpose. The parties concerned shall be given a reasonable notice of the hearing, specifying the day, hour and place thereof and accompanied by a statement of the alleged violation, or the reasons for such refusal. The director may allow the parties concerned a period of not more than thirty days from the date of the hearing within which to make a substantial compliance with said rules, regulations and uniform minimum requirements. An appeal from the decision of the director may be taken to the board, whose decision shall be final. Notice of the refusal, suspension or revocation of a certificate of registration shall be given to each distributor or dealer of record handling milk produced on such dairy farm, and to the board of health of each town of record where milk produced on such dairy farm is sold, offered or exposed for sale. In case of emergency, the department of public health may suspend or revoke any such certificate of registration.

Section 16E. Producers of milk whose dairy farms are registered hereunder shall submit upon a form furnished by the director at such other times as he may request a complete statement for any one calendar month, the same to be made in accordance with the provisions and requirements of section sixteen D.

Section 16F. Each person, not a producer of milk, whose principal business is the sale at wholesale or retail of milk, shall, upon commencing to transact such business, register as a dealer with the director, and shall thereafter annually so register during the month of June, and upon every such registration shall state the address of each of his places of business, the names and addresses of pro-

ducers supplying him the milk, with the number of quarts of milk supplied by each producer during the last calendar month preceding registration. The director may require each such person to prepare and submit to him, upon a form furnished by him therefor, at such other times as he may require, a further statement of similar information relating to any one calendar month. Every statement shall be verified by oath or written declaration that it is made under the penalties of perjury. Registrations made under this section shall expire on the following June thirtieth, and applications for renewals thereof shall be made on forms furnished by the director.

Section 16G. No person shall produce and sell milk unless the dairy farm at which it is produced is registered, and no person shall sell or distribute milk purchased elsewhere than from a producer whose dairy farm is so registered or from a registered dealer.

Section 16H. The director may issue a temporary certificate of registration for any dairy farm registered under the provisions of section sixteen C pending an official inspection and such consequent action as may be necessary relative to the renewal or non-renewal of the certificate of registration, and may revoke a certificate so issued.

Section 16I. The board shall designate, as qualified areas for additional milk supply, states, or parts thereof, wherein milk is produced on dairy farms subject to inspection substantially similar to that required by the board in this commonwealth and whose geographical location will reasonably guarantee the delivery of milk of a satisfactory quality for the Massachusetts market. Producers of milk in said states, or parts thereof, shall thereupon be deemed to be registered producers within the meaning of sections sixteen to sixteen I, inclusive, and shall be entitled to certificates of registration without further inspection; provided, that no such certificate shall be granted to such a producer if, upon inspection, the director shall deem that satisfactory compliance with the Massachusetts uniform minimum requirements for dairy farm inspection does not exist. Any producer of milk within any state or part thereof, not designated as a qualified area as aforesaid, shall, within a period of one year after his application therefor, be entitled to have his dairy farm inspected by the director, or by an agency designated by the director, and shall not be refused a certificate of registration for any reason other than failure to comply with said Massachusetts uniform minimum requirements or inability for geographical reasons to deliver milk of a satisfactory quality in the Massachusetts market. If, at any time, the board believes that a shortage of milk exists or is threatened anywhere within the commonwealth, temporary certificates of registration shall, without inspection, be issued for non-registered dairy farms in such numbers and in such areas as the board may deem wise, and any such certificate may be revoked by the board.

Section 16J. Any person violating any provision of sections sixteen to sixteen G, inclusive, shall for the first offence be punished by a fine of not more than one hundred dollars; and for any subsequent offence shall be punished by a fine of not less than one hundred nor more than five hundred dollars, or by imprisonment for not more than three months, or both. Sections sixteen to sixteen J, inclusive, shall not apply to cream complying with the appropriate Massachusetts legal standard for cream established by section twelve.

SECTION 4. Said chapter ninety-four, as amended in section forty-three by chapter one hundred and twenty-two of the acts of nineteen hundred and twenty-four, is hereby further amended by striking out said section and inserting in place thereof the following:—

Section 43. No producer of milk shall sell or deliver for sale in any town any milk produced or dealt in by him without first obtaining from the board of health of such town a permit authorizing such sale or delivery. Said board of health may issue such permit after an inspection of the milk, and of the place where and the circumstances under which it is produced and handled, has been made by it or its authorized agent, but no producer shall be entitled to such permit unless he has a certificate of registration, issued under section sixteen C, in full force and effect; provided, that no such certificate shall be required for the production or sale of cream complying with the appropriate legal standard for cream established by section twelve.

Any permit so granted may contain such reasonable conditions as said board deems suitable for protecting the public health, and may be revoked for failure to comply with any of such conditions. After a permit has been revoked, it may be reissued in the same manner in which the original permit was issued. The board revoking or reissuing said permit shall immediately send notice thereof to the department of public health, which may enforce this provision. The department shall at once inform the board of health of any other town where, in its judgment, milk produced by the person to whom the permit relates would be likely to be sold or delivered for sale, and it shall also give notice of such revocation or reissue to any dealer in milk who in its judgment would be likely to purchase milk from such person; and after receipt of notice of revocation no dealer so notified shall sell or offer for sale such milk. If the board of health of any town refuses to issue a permit under this section or a permit previously issued is revoked by it, an appeal may be taken to the said department, whose decision shall be final. Violation of any provision of this section shall be punished by a fine of not more than one hundred dollars.

SECTION 5. Notwithstanding the provisions of this act, any person who, upon its effective date, was

producing milk for sale or distribution within the commonwealth, under a permit issued by a local board of health in the commonwealth, may continue to supply such milk for sale or distribution during a period not to exceed eighteen months from said effective date pending the issuance or refusal to issue a certificate of registration by the director of the division of dairying and animal husbandry of the department of agriculture under section sixteen C of chapter ninety-four of the General Laws, inserted by section three of this act, unless said permit is sooner revoked as provided by law.

SECTION 6. Notwithstanding the provisions of this act, any person engaged in the sale, handling and distribution of milk on the effective date thereof may continue to sell, handle and distribute milk without being registered for a period not to exceed twelve months pending his registration as a dealer by said director in accordance with the provisions of section sixteen F of said chapter ninety-four, inserted by section three of this act.

SECTION 7. For the purposes of this act, there may be expended during the current fiscal year, subject to appropriation, a sum not exceeding eight thousand dollars.

SECTION 8. This act shall take effect on the first day of October in the current year.

MISCELLANY

HARVARD MEDICAL SCHOOL

June 1, 1932.

APPOINTMENTS FOR THE ACADEMIC YEAR 1932-33

Assistants

Frank Andrew Hamilton in Anatomy.
Harold Valmore Hyde in Anatomy and Gynaecology.
Reginald Dimock Margeson in Anatomy and Gynaecology.
George Calvin Prather in Anatomy.
William Martindale Shedden in Anatomy.
Louis Ladislaus Dienes in Bacteriology and Immunology.
Monroe Davis Eaton, Jr., in Bacteriology and Immunology.
Eliot Furness Porter in Bacteriology and Immunology.
Austin Walter Cheever in Dermatology and Syphilology.
John Godwin Downing in Dermatology and Syphilology.
Carmi Rupert Alden in Gynaecology.
Joseph Powitzer Cohen in Gynaecology.
Frederick James Lynch in Gynaecology.
George Elliott May in Gynaecology.
John Rock in Gynaecology and Obstetrics.
Edward Bernard Sheehan in Gynaecology.
Abraham Solomon Troupin in Gynaecology.
Myles Pierce Baker in Medicine.
Walter Orville Blanchard in Medicine.
Edward Franklin Bland in Medicine.
Theodore Learnard Badger in Medicine.
Harry Blotner in Medicine.
Allen Gilbert Brailey in Medicine.
Harry Aaron Derow in Medicine.
Laurence Brewster Ellis in Medicine.
James Morison Faulkner in Medicine.
Marshall Nairne Fulton in Medicine.
Samuel Leon Gargill in Medicine.
Richard Glenn Hahn in Medicine.
Aubrey Otis Hampton in Roentgenology.
Richard Bruce King in Medicine.
Jacob Lerman in Medicine.
Frank William Marlow, Jr., in Medicine.
Ovid Otto Meyer in Medicine.
Walter Kendall Myers in Medicine.
Hyman Allan Novack in Medicine.
Robert Sterling Palmer in Medicine.
George Phillips Reynolds in Medicine.
Wyman Richardson in Medicine.
Joseph Ephraim Frank Riseman in Medicine.
Max Ritvo in Roentgenology.
George Porter Robb in Medicine.
Samuel Alexander Robins in Roentgenology.
Frederick Herman Scharles in Medicine.
Richard Pratt Stetson in Medicine.
William Borden Stevens in Medicine.
Maurice Benjamin Strauss in Medicine and in Tropical Medicine.
James Harvey Townsend in Medicine.
George Colket Caner in Neurology.
Edwin Muncks Cole in Neurology.
Charles Soucek Kubik in Neurology and in Neuropathology.
Hiram Houston Merritt, Jr., in Neuropathology.
Lawrence Raymond Morrison in Neuropathology.
Samuel Hyman Epstein in Psychiatry.
Ives Hendrick in Psychiatry.
Saul Berman in Obstetrics.
John Anthony Coyne in Obstetrics.
Marion Fletcher Eades in Obstetrics.
Paul Gustafson in Obstetrics.
Meinolph Valen Kappius in Obstetrics.
Herbert Bristol Nelson in Obstetrics.
Judson Arthur Smith in Obstetrics.
William Tecumseh Sherman Thorndike in Obstetrics.
William Bartholomew Young in Obstetrics.
William Parkes Beetham in Ophthalmology.
Virgil Glenn Casten in Ophthalmology.
Paul Austin Chandler in Ophthalmology.
Edwin Blakeslee Dunphy in Ophthalmology.
Trygve Gundersen in Ophthalmic Research and in Ophthalmology.
Merrill Jenks King in Ophthalmic Research and in Ophthalmology.
Harry Knowles Messenger in Ophthalmic Research and in Ophthalmology.
Benjamin Sachs in Ophthalmology.
Theodore Lasater Terry in Ophthalmology.

Joseph Seaton Barr in Orthopaedic Surgery.
Edwin French Cave in Orthopaedic Surgery.
William Thomas Green in Orthopaedic Surgery.
John Grove Kuhns in Orthopaedic Surgery.
Robert Hartshorne Morris in Orthopaedic Surgery.
Sumner Mead Roberts in Orthopaedic Surgery.
William Alexander Rogers in Orthopaedic Surgery.
John Ignatius Bradley in Pathology.
James Marvin Baty in Pediatrics.
Stewart Hilton Clifford in Pediatrics and Child Hygiene.
Robert Dudley Curtis in Pediatrics.
Ralph Weir Daffinee in Pediatrics.
Louis Klein Diamond in Pediatrics.
Richard Cannon Eley in Pediatrics and Communicable Diseases.
Robert Norton Gans in Pediatrics.
Stanton Garfield in Pediatrics and Child Hygiene.
Henry Louis George, Jr., in Pediatrics.
Eliot Horton Luther in Pediatrics.
Arthur Bates Lyon in Pediatrics.
Wilfred Lawrence McKenzie in Pediatrics.
Norman Anthony Pokorny in Pediatrics.
David Winne Sherwood in Pediatrics.
Harvey Spencer in Pediatrics and Child Hygiene.
LaVerne Almon Barnes in Preventive Medicine and Hygiene.
Robert Henry Aldrich in Surgery.
Gordon Douglas Atkinson in Genito-Urinary Surgery.
Franklin Greene Balch, Jr., in Surgery.
Edward Benson Benedict in Surgery.
Newton Clarence Browder in Surgery.
Fletcher Hatch Colby in Genito-Urinary Surgery.
Edward Anthony Cooney in Surgery.
Oliver Cope in Surgery.
Allan Littlefield Davis in Surgery.
Daniel Joseph Duggan in Surgery.
Herbert George Dunphy in Surgery.
Torr Wagner Harmer in Surgery.
Edwin Parker Hayden in Surgery.
Henry William Hudson, Jr., in Surgery.
Franc Douglas Ingraham in Surgery.
Charles Alexander Lamb in Surgery.
Thomas Hinckley Lanman in Surgery.
Stephen James Maddock in Surgery.
Patrick James Mahoney in Surgery.
Prodromos Nicholas Papas in Genito-Urinary Surgery.
Thomas Howard Peterson in Surgery.
Lyman Gilder Richards in Surgery.
Horatio Rogers in Surgery.
Richard Ilsley Smith in Surgery.
Grantley Walder Taylor in Surgery.
Augustus Thorndike, Jr., in Surgery.
William Allen White, Jr., in Surgery.
Albert Aurelius Hornor in Tropical Medicine.
Maurice George Evans in Laryngology.
Robert Lincoln Goodale in Laryngology.
Charles Isaac Johnson in Laryngology.
Francis Lee Weille in Laryngology and in Otology.
Moses Hyman Lurie in Otology.
Leon Edward White in Otology.

Associates

Francis Browne Grinnell in Bacteriology and Immunology.
Maynard Ladd in Pediatrics.
Conrad Wesselhoeft in Communicable Diseases.
Joseph Williams Schereschewsky in Preventive Medicine and Hygiene.
Channing Chamberlain Simmons in Surgery.

Austin Teaching Fellow

Yellapragada Subba Row in Biological Chemistry.

Instructors

Torr Wagner Harmer in Anatomy.
Allan Lyle Graffin in Anatomy.
Maximiliano Ruiz Castaneda in Bacteriology and Immunology.
LeRoy Dryden Fothergill in Bacteriology and Immunology and in Pediatrics.
Arthur Moses Greenwood in Dermatology and Syphilology.
Edward Winslow Karcher in Dermatology and Syphilology.
Clarence Guy Lane in Dermatology and Syphilology.
Jacob Hyams Swartz in Dermatology and Syphilology.
Frederick Leo Good in Gynaecology.
Robert Montraville Green in Gynaecology.
Richard Goodwin Wadsworth in Gynaecology.
John Thomas Williams in Gynaecology.
Fuller Albright in Medicine.
Edward Stanley Emery, Jr., in Medicine.
Francis Cooley Hall in Medicine.
Thomas Duckett Jones in Medicine.
William Parry Murphy in Medicine.
Edward Charles Vogt in Roentgenology.
Louis Wolff in Medicine.
George Clymer in Neurology.
William Herman in Psychiatry.
Moses Ralph Kaufman in Psychiatry.
William Gordon Lennox in Neuropathology.
Donald John MacPherson in Neuropathology.
Charles Anthony McDonald in Neurology.
Martin William Peck in Psychiatry.
Oscar Jacobus Raeder in Psychiatry.
Kenneth James Tillotson in Psychiatry.
Henry Rouse Viets in Neurology.
Delos Judson Bristol, Jr., in Obstetrics.
Robert Laurent DeNormandie in Obstetrics.
Foster Standish Kellogg in Obstetrics.
John Baker Swift in Obstetrics.
Clyde Edgar Keeler in Ophthalmic Research.
Hugo Bruno Carl Riemer in Ophthalmology.
Albert Howell Brewster in Orthopaedic Surgery.
Lloyd Thornton Brown in Orthopaedic Surgery.
George Kenneth Coonse in Orthopaedic Surgery.
Henry Joseph FitzSimmons in Orthopaedic Surgery.
Robert Soutter in Orthopaedic Surgery.

Loring Tiffany Swaim in Orthopaedic Surgery.
George Wilson Van Gorder in Orthopaedic Surgery.
Irving Benjamin Akerson in Pathology.
Granville Allison Bennett in Pathology.
Paul Edmund Boyle in Pathology.
Sidney Farber in Pathology.
Arthur Tremain Hertig in Pathology.
Percy Rogers Howe in Pathology.
Valy Menkin in Pathology.
Rudolf Osgood in Pathology.
James Stewart Rooney in Pathology.
Reuben Zeiten Schulz in Pathology.
George Marvin Hass in Pathology.
Hans Theller in Comparative Pathology.
Randolph Kunhardt Byers in Pediatrics.
Paul Waldo Emerson in Pediatrics.
Richard Spelman Eustis in Pediatrics.
Henry Ezra Gallup in Pediatrics.
Joseph Garland in Pediatrics.
Lewis Webb Hill in Pediatrics.
Gerald Norton Hoeffel in Pediatrics.
Eliot Hubbard, Jr., in Pediatrics.
Edward Scott O'Keefe in Pediatrics.
Eli Charles Romberg in Pediatrics.
Warren Richards Sisson in Pediatrics.
Abraham Solomon Small in Pediatrics and Child Hygiene.
Edward Charles Smith in Communicable Diseases.
Philip Haskell Sylvester in Pediatrics.
Richard Carlisle Tefft, Jr., in Pediatrics.
James Leroy Wilson in Pediatrics.
Edwin Theodore Wyman in Pediatrics.
Magnus Ingstrup Gregersen in Physiology.
Gordon Clark Ring in Physiology.
William Augustus Hinton in Bacteriology and Immunology and in Preventive Medicine and Hygiene.
Robert Nason Nye in Bacteriology and Immunology.
Elliott Stirling Andrew Robinson in Bacteriology and Immunology and in Preventive Medicine and Hygiene.
Sidney David Kramer in Preventive Medicine and Hygiene.
Arthur Wilburn Allen in Surgery.
George David Cutler in Surgery.
Ernest Merrill Daland in Surgery.
Jacob Fine in Surgery.
Harry Fairbanks Hartwell in Surgery.
Robert Ritchie Linton in Surgery.
Stanley John Gregory Nowak in Surgery.
Thomas Kinsman Richards in Surgery.
Alpha Reuben Sawyer in Genito-Urinary Surgery.
Edward Lorraine Young, Jr., in Surgery.
Harry Aldrich Barnes in Laryngology.
Frederick Eugene Garland in Laryngology.
Edwards Woodbridge Herman in Laryngology.
Charles Davison Knowlton in Laryngology.
Duncan Campbell Smyth in Laryngology.
Harold Grant Tobey in Laryngology.
William Irving Wiggin in Laryngology.
George Henry Wright in Laryngology.
Frederick Leon Bogan in Otology.
Philip Edward Meltzer in Otology.
Charles Terrell Porter in Otology.

Lecturers

Carlos Chagas on Tropical Medicine.
Roland Chatham Connor on Tropical Medicine.
Alexander Hamilton Rice on Diseases of South America.

Research Associates

Thomas Leroy McMeekin in Physical Chemistry.
Mary Elizabeth Dailey in Neuropathology.
LeRoy Dryden Fothergill in Comparative Pathology.
Arthur Tremain Hertig in Comparative Pathology.
Elizabeth Evans Lord in Pediatrics.
Roy Graham Hoskins in Physiology.

Research Fellows

George Van Siclen Smith in Gynaecology.
James Porter Baker, Jr., in Medicine.
Joseph Bernard Boland, Jr., in Medicine.
William Brown Chew in Medicine.
Dorothy Rourke Gilligan in Medicine.
Bernard Maxwell Jacobson in Medicine.
Guili Lindh Muller in Medicine.
Arthur Jackson Patek, Jr., in Medicine.
Robert Allan Phillips in Medicine.
Francis Henry Laskey Taylor in Medicine.
Alexander Woodward Winkler in Medicine.
Irma Backe in Psychiatry.
Gaylord Palmer Coon in Psychiatry.
Frank Christian d'Elseaux in Psychiatry.
Henry Stone Forbes in Neuropathology.
Merrill Moore in Psychiatry.
Leon Joseph Saul in Psychiatry.
William Clifford Munroe Scott in Psychiatry.
LeRoy Goodman in Obstetrics.
David Hurwitz in Obstetrics.
Donald Macomber in Obstetrics.
William Hanlon Oatway, Jr., in Obstetrics.
Miriam Friedman Menkin in Pathology.
Fu-t'ang Chu in Pediatrics.
Chandler McCuskey Brooks in Physiology.
Milton Oliver Lee in Physiology.
Arturo Rosenblueth in Physiology.
Koji Ando in Preventive Medicine and Hygiene.
Chapman Hunter Binford in Preventive Medicine and Hygiene.
Egon Lorenz in Preventive Medicine and Hygiene.
Murray Jacob Shear in Preventive Medicine and Hygiene.
Thomas Nash White, Jr., in Preventive Medicine and Hygiene.

Teaching Fellows

Irvin Sigwald Danielson in Biological Chemistry.
George Herbert Hitchings in Biological Chemistry.
Norwood Korter Schaffer in Biological Chemistry.
Hugh Meyers Crumay in Pharmacology.
Chester William Hampel in Physiology.

James Oliver Pinkston in Physiology.

Fuller Albright, Henry P. Walcott Fellow in Clinical Medicine.

Maxwell Finland, Francis Weld Peabody Fellow in Medicine.

John Molloy Flynn, Assistant Physician to Students.

From November 1, 1932 to July 1, 1933:

Lowrey Frederick Davenport, Research Fellow in Medicine.

Robert Jerome Parsons, Research Fellow in Medicine.

Howard Amos Van Auken, Research Fellow in Medicine.

From November 1, 1932 to September 1, 1933:

Austin Moore Brues, Research Fellow in Medicine.

For three years from September 1, 1932:

Frank Arthur Pemberton, Clinical Professor of Gynaecology.

Everard Lawrence Oliver, Clinical Professor of Dermatology and Syphilology.

Edwin Allen Locke, Clinical Professor of Medicine.

William Carter Quinby, Clinical Professor of Genito-Urinary Surgery.

James Bourne Ayer, James Jackson Putnam Clinical Professor of Neurology.

Walter Bauer, Tutor and Assistant Professor of Medicine.

Frederic Lyman Wells, Assistant Professor of Experimental Psychopathology.

Hugh Kingsley Ward, Assistant Professor of Bacteriology and Immunology.

Frank Fremont-Smith, Assistant Professor of Neuropathology.

Karl Murdock Bowman, Assistant Professor of Psychiatry.

John Herbert Waite, Assistant Professor of Ophthalmology.

James Warren Sever, Assistant Professor of Orthopaedic Surgery.

Marius Nygaard Smith-Petersen, Assistant Professor of Orthopaedic Surgery.

Charles Fremont McKhann, Assistant Professor of Pediatrics (in charge of Communicable Diseases).

Augustus Riley, Assistant Professor of Genito-Urinary Surgery.

Bronson Crothers, Assistant Professor of Pediatrics.

John Franklin Enders, Instructor in Bacteriology and Immunology.

William Thomas Salter, Instructor in Medicine.

James Clarke White, Tutor and Instructor in Surgery.

Dr. Harris Peyton Mosher has been appointed Walter Augustus Lecompte Professor of Otology, to serve from September 1, 1932.

Dr. Frederick Herman Verhoeff, Professor of Ophthalmic Research, was appointed Director of the Howe Laboratory of Ophthalmology, to serve from June 1, 1932.

The resignation of William Phillips Graves, M.D. has been received to take effect September 1, 1932. Dr. Graves becomes W. H. Baker Professor of Gynaecology, Emeritus.

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending June 4, indicate a mortality rate of 10.7 as against a rate of 11.6 for the corresponding week of last year. The highest rate (19.0) appears for Nashville, Tenn., and the lowest (4.8) for Yonkers, N. Y. The highest infant mortality rate (11.4) appears for Utica, N. Y., and the lowest for Cambridge, Mass., Canton, Ohio, Fall River, Mass., Schenectady, N. Y., Somerville, Mass., South Bend, Ind., Tacoma, Wash., Trenton, N. J., Waterbury, Conn., and Worcester, Mass., which reported no infant mortality.

The annual rate for 85 cities is 12.3 for the twenty-two weeks of 1932, as against a rate of 13.2 for the corresponding period of the previous year. The average thus far for 1932 shows an improvement over the statistics of the preceding year.

INTERESTING FACTS WITH REFERENCE TO THE LIFE AND DEATH OF DR. WILLIAM W. KEEN

Later references to the life of this eminent surgeon show that he was consistent in his devotion to medical science in that he bequeathed his brain and such other parts of his body as might be of benefit to science for study by competent pathologists. He even named the operator who was to conduct the postmortem and it was found that the cause of his death was an intestinal obstruction from an adhesion resulting from a former operation.

Dr. Keen's estate, like all others under present conditions, had shrunk to small proportions, but he made very varied and liberal provisions for persons and institutions in which he was interested.

Originally Brown University, his Alma Mater, was to have received $100,000 to be used in founding the Corinna Borden Keen Research Fellowship Fund, in memory of his wife, for the advance of pure science. Three-fourths of the net income is to be used for graduate fellowships in chemistry and biology "in the realm of pure science" without regard to the possibility of the immediate usefulness of the results. One-fourth of the income is to be added each year to the principal until it reaches $1,000,000 when all the income may be used. Appointments to the fellowships are to be made without regard to race, color, religious belief or pecuniary condition and are to be available to women as well as to men.

Jefferson Medical College is also remembered liberally in Dr. Keen's will.

THE SPRINGFIELD HOSPITAL

The Springfield Hospital had its dedicatory exercises June 7. The appended program was given in the morning for the benefit of the visiting doctors. Luncheon was served to the visiting doctors by the Springfield Hospital staff, and the program in the afternoon was as follows:

Mr. Henry A. Field, President of the Board of Trustees, presiding.

"Trees"—Song by the nurses.

Address—Mayor Dwight Winter of Springfield.

History of the Springfield Hospital—Dr. Ralph H. Seelye.

Address — Dr. F. A. Washburn, Director of the Massachusetts General Hospital, Boston, Mass.

"Moonlight Sonata"—Song by the nurses.

"Passing of the Key" ceremony.

Prayer—Rt. Rev. Thomas F. Davies.

SPRINGFIELD HOSPITAL CLINIC ON TUESDAY, JUNE 7, 1932

Main Operating Room Floor 8:30 A.M.
- Operations
  - Surgical Service—Dr. Schillander
  - Nose and Throat Service—Dr. Dalton
- Dry Clinic
  - Orthopedic and Fracture Services — Dr. Wheat

Merrick Operating Room 9:30 A.M.
- Genito-Urinary Service—Dr. Seaman
- Bronchoscopic Clinic—Dr. Rood
- Roentgenological Service—Dr. VanAllen

Out-Patient Department 9:30 A.M.
- Diabetic Clinic—Dr. Rabinovitz
- Cancer Clinic—Dr. F. S. Hopkins

Laboratory 9:30 A.M.
- Pathological Department—Dr. Jones
- Electrocardiograph Clinic—Dr. Steele

Ward Visits
- Medical Service 10:00 A.M.—Dr. Smith
- Pediatric Service 11:00 A.M.—Dr. Adams

Staff Room—Dry Clinics
- Neurological Cases—Dr. Whitney 10 A.M.
- Cancer of Large Intestine—Dr. Sweet 11 A.M.

CORRESPONDENCE

HISTORICAL REFERENCES IN A PAPER BY COLONEL W. P. MacARTHUR

To the Editor of the *New England Journal of Medicine*,
Boston, Mass.

Dear Sir,

Colonel W. P. MacArthur of the Royal Army Medical Corps recently read a paper before the Royal College of Surgeons of England on "The Surgeon and Old Time Plague," in which he spoke of an anesthetic being used in the Fourteenth Century, a fact which had never been brought to my attention and which I think may be of interest to many of your readers who perhaps may not be better informed in the history of medicine than I.

"Guy de Chauliac, in his Chirurgia Magna," says Colonel MacArthur, "describes a form of anesthetic employed in his time and the method of administration. A mixture was made of opium and the juice of nightshade, hyoscyamus, mandrake, ivy, hemlock and lettuce. In this a sponge was soaked and dried in the sun. When required for use the sponge is to be placed in hot water and the fumes inhaled by the patient until he passes under their influence. Then the incision can be made without pain. After the operation another sponge soaked in vinegar and applied to the nostrils will bring the patient to himself. So that, contrary to the popular belief, general anesthesia, as an aid to surgery, was not a discovery of the Nineteenth Century."

Colonel MacArthur's paper does not tell us whether Guy de Chauliac used general anesthesia in his surgical operations in the plague or Black Death, which he described in his book as beginning in Avignon in January, 1348, and to which he himself fell a victim. In describing his illness, Guy says: "I fell into a continued fever with a bubo in the groin, and lay sick for almost six weeks; and was in so great peril that all my friends believed I should perish; but the bubo breaking down and being treated as I have said, I escaped by the will of God, whose name be blessed through all ages, Amen." Colonel MacArthur tells us that twenty years later, when the plague broke out in Avignon, Guy de Chauliac again contracted the disease and died from it.

Very truly yours,
L. VERNON BRIGGS.

London, June 2, 1932.

RECENT DEATHS

SYLVIA — DR. MANUEL VICTORINO SYLVIA died at his home in New Bedford, March 22, 1932. He graduated from the New York University Medical College in 1891 and joined the Massachusetts Medical Society in 1926.

HOLT—DR. CLIFFORD PARKER HOLT a retired physician of Cambridge, Mass., died May 28, 1932.

He was a graduate of the University of Vermont College of Medicine in 1901. He leaves a brother, H. Augustus Holt of Williamstown, Vermont, two nephews and a niece.

HENNELLY—DR. THOMAS PATRICK HENNELLY, of Pittsfield, Mass., died suddenly May 19, 1932 at his home of an acute heart attack. He joined the Massachusetts Medical Society in 1910 and was a graduate of the Medical School of Harvard University receiving his M.D. degree in 1908.

Dr. Hennelly was a native of Waltham, Mass., where he was born in 1882. He was the first President of the Staff of the St. Luke's Hospital and a member of the Staff of the House of Mercy, and the

Fairview Hospital of Great Barrington. He had served as President of the Berkshire District Medical Society and was Chairman of the Berkshire County Cancer Clinic at the time of his death. He is survived by his widow, Mrs. Helena Elizabeth (Wickham) Hennelly, and six children.

SHEEHAN—Dr. William Joseph Sheehan, aged 57 of Milton, died at the Carney Hospital, June 12, 1932. He graduated in Medicine at the Tufts College Medical School in 1903 and joined the Massachusetts Medical Society in 1905.

He was a member of the Staff of Carney Hospital in the Oto-Laryngological Department. He was a member of the South Boston Medical Society, the Guild of St. Luke and the Pere Marquette Council, Knights of Columbus. He is survived by his widow and three children.

SUPPLEMENTARY NOTICE

SLACK—Dr. Francis H. Slack, Associate Professor of Public Health and director of the laboratory of the Homberg Infirmary, died at the Baker Memorial Hospital, May 5, 1932, after a long illness. He was a graduate of Tufts Medical College and had been connected with Technology since 1909. He was a Fellow of the Massachusetts Medical Society having joined in 1904, director at the Sias Laboratory in Brookline, a member of the Society of Bacteriology, the American Medical Association and the American Public Health Association.

After completing his hospital training following his graduation from Tufts College in 1898, Dr. Slack was employed in the Public Health Department of Boston and later was made head of that department. In 1907 he went to the Kansas State Agricultural College where he was Professor of Bacteriology. Two years later he returned to Boston and began his work at Technology as an instructor. He received his Associate Professorship last year.

WILLIAMS — Dr. Frank Percival Williams died at his summer home, Marblehead Neck, June 18, 1932, after a long illness. Dr. Williams was born in Weymouth, Massachusetts, on September 2, 1870, son of Thomas Vickery Williams and Mary Ann (Healey) Williams. His early education was at the Weymouth High School and the Massachusetts Institute of Technology. He took his M.D. degree from the medical school of Harvard University in 1895, subsequently serving as house officer at St. Elizabeth's Hospital, Brighton, Massachusetts, and at the Post Graduate Hospital, New York City.

Dr. Williams began private practice in Boston in 1897 and served on the Staff of the Boston Dispensary and Faculty of Tufts College Medical School. He was Surgeon General of the Massachusetts National Guard and entered the World War as Commissioned Lieutenant Colonel of the Medical Corps in August, 1917, serving overseas with the twenty-sixth Division. He was cited for bravery by the British. He was transferred to Camp Hospital No. 30 and later served in the thirty-fifth Division and Headquarters. He received his discharge in May, 1919.

He joined the Massachusetts Medical Society in 1894. He was a member of the Boston Medical Library, the Society of Medical Sciences, the Brookline Medical Club and several social and civic organizations.

Dr. Williams was twice married; his first wife Marion Floyd Goodale died several years ago. He is survived by his wife Louise M. D. (Phillips) Williams.

EAMES—Dr. Frederick H. Eames, a graduate of the Bowdoin Medical School in 1892, died at the Deaconess Hospital, June 15, 1932. He had lived in Watertown, Mass., for the past four years. He was born in Bath, Maine, in 1860 and had lived in Somerville, Mass., before moving to Watertown.

He is survived by two sons, F. Weston Eames of Medford and Harold M. Eames of Watertown.

SYNAN—Dr. William E. Synan died at the Union Hospital in Fall River, aged 60. He took his A.B. degree from Holy Cross in 1889 and his M.D. degree from the University of Pennsylvania Medical School in 1892. He joined the Massachusetts Medical Society in 1893 and had been President of the Fall River Medical Society and was prominent in civic affairs in Fall River.

OBITUARY

RESOLUTIONS ON THE DEATH OF DR. CHARLES F. McCAFFREY

Whereas: It has pleased Almighty God to call to his Eternal Reward, while still in the prime of life and in the midst of an active professional career, our esteemed colleague and brother member of The Somerville Hospital Staff, Dr. Charles F. McCaffrey.

Be it resolved: That we hereby mourn the loss of a respected member of his profession and a valuable citizen of the community. His genial personality and high character will always be remembered by those who knew him.

Be it further resolved: That these resolutions be sent to the bereaved family and spread upon the records of the Somerville Hospital Staff.

Signed

John E. Gillis, M.D.,
C. Howard Dalton, M.D.,
Eugene L. Maguire, M.D.,
Committee.

NOTICES

EXAMINATION CONDUCTED BY THE AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS

The American Board for Ophthalmic Examinations will hold an examination in Montreal on Monday, September 19, 1932, at the time of the meeting

of the American Academy of Ophthalmology and Oto-Laryngology.

Necessary applications for this examination can be procured from the Secretary, Dr. William H. Wilder, 122 South Michigan Avenue, and should be sent to him at least sixty days before the date of the examination.

WILLIAM H. WILDER, *Secretary.*

RADIO HEALTH MESSAGES

JUNE, 1932

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:20 P.M.

June

28 Communicable Diseases.

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:30 P.M.

Health matters of public interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

REPORT AND NOTICE OF MEETINGS

OFFICERS OF THE AMERICAN PSYCHIATRIC ASSOCIATION

At the annual meeting of the American Psychiatric Association held in Philadelphia, June 1, the officers elected were as follows:

President—Dr. James V. May of Boston.

Vice-President — Dr. George H. Kirby of New York City.

Honorary Vice-President—Dr. M. B. Hodskins of Palmer, Mass.

Secretary-Treasurer—Dr. Clarence O. Cheney of New York City.

CLINICAL CONGRESS OF THE AMERICAN COLLEGE OF SURGEONS

TWENTY-SECOND ANNUAL SESSION, ST. LOUIS, OCTOBER 17-21, 1932

This year's Clinical Congress of the American College of Surgeons will be held in St. Louis, October 17-21. The surgeons of St. Louis, under the leadership of a strong and representative committee with Dr. Evarts A. Graham as Chairman, are planning an instructive program of clinics and are keenly interested to provide a complete showing of the clinical activities of that great medical center. The schedule provides for clinics beginning at 2 o'clock on Monday afternoon and continuing during the mornings and afternoons of the following four days.

Programs are being arranged for five evening meetings at the Jefferson Hotel and two sessions of special interest to ophthalmologists and otolaryngologists at the Statler Hotel. At the presidential meeting on Monday evening following the inaugural address of the president-elect, Dr. J. Bentley Squier, of New York City, the John B. Murphy oration in surgery will be delivered by Sir William I. DeCourcy Wheeler, of Dublin, Ireland. At the scientific sessions on Tuesday, Wednesday and Thursday evenings distinguished surgeons of the United States and Canada with a number of eminent surgeons from abroad will present papers dealing with subjects of present-day interest. On Friday evening at the Convocation the Fellowship address will be delivered by Dr. Robert A. Milliken, Director of the Norman Bridge Laboratory of Physics, California Institute of Technology.

General headquarters for the Congress will be established at the Jefferson Hotel, Locust and Twelfth Streets, St. Louis.

SOCIETY MEETINGS CONGRESSES AND CONFERENCES

July 10 - August 12—The Second Intensive European Summer Course in Surgery, Gynecology and Obstetrics. See page 714, issue of March 31.

September 19-22 — International Congress of Biliary Lithiasis. See notice on page 457, issue of February 25.

October 17-21—Clinical Congress of the American College of Surgeons. See notice elsewhere on this page.

October 24-27 — American Public Health Association. See notice on page 1321, issue of December 31.

October 24-28—Inter-state Postgraduate Medical Association of North America. See page 39, issue of January 7.

BOOK REVIEW

Modern Medical Treatment. By E. BELLINGHAM-SMITH and ANTHONY FEILING. New York. William Wood & Co., 1931. Two volumes. Price $12.00.

These volumes purport to be a complete survey of medical treatment. There is an introduction by Sir Humphry Rolleston. The plan of the volumes is by systems, and in each section only sufficient diagnostic or pathologic discussion is introduced to make the treatment clear. The volumes are valuable but the recommendations appear to the reviewer to be extremely uncritical although sufficiently complete to be of value. The use of proprietary names, particularly English proprietary names, make some of the matter obscure because the actual chemical nature of these substances is not indicated. The volumes would also benefit by a critical check on the drugs recommended.

On the whole, it does not seem to the reviewer that these volumes present any great modification or advance over other similar manuals.